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Nekoosa-Edwards Increases Hourly Wage

John E. Alexander, President, Announces 1,300 Employees Will Benefit By Additional 3 Cents Per Hour Wage Scale—Paper Industry On Wisconsin Established Sixty Years Ago—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 28, 1941 — Hourly paid workers in the Nekoosa-Edwards Paper Company mills at Port Edwards and Nekoosa, Wis., have been given a wage increase of three cents per hour, retroactively effective as of April 1, 1941, according to announcement of John E. Alexander, president. Approximately 1,300 will benefit.

The increase followed negotiations covering the annual labor contract between the company and three AFL unions, the International Brotherhood of Pulp, Sulphite and Papermill Workers, the International Brotherhood of Papermakers, and the International Association of Machinists.

Wisconsin River Mill Founded in 1881

April 25th marked the sixtieth anniversary of the establishment of the pulp and paper industry on the Wisconsin River. The *Daily Tribune,* Wisconsin Rapids, Wis., featured the event by running an article as if written sixty years ago announcing the completion of negotiations to start the mill.

On April 25, 1881, Charles A. Spencer and Walter E. Mack of Indiana, made a deal to take over the Reuben C. Lyon shingle and lath mill at what was then known as Centralia, Wis. They formed a partnership to manufacture wood pulp, intending to obtain their raw materials through wood-cutters in the vicinity. The lease provided for a rental of $1,000 per year for the first five years, and $500 yearly thereafter. Spencer was the manager of the enterprise. Local residents were skeptical of the success of the venture, because the market for pulp was considered too far away. The pulp was hauled to the Fox River Valley, however, where paper mills were operating. Eventually, a paper mill was built at Grand Rapids, now Wisconsin Rapids, the beginnings of the mammoth Consolidated Water Power and Paper Company of the present day. Mills are now located all along the Wisconsin River, at Stevens Point, Biron, Nekoosa, Port Edwards, Rothschild, Brokaw, Mosinee, Wausau, Merrill and Tomahawk.

Paper Mill Employment Higher

The employment curve in paper mills and allied plants in Wisconsin is upward by 2.1% for March as compared to February, and 6.8% as compared to March a year, acccording to the monthly statistical report of the Wisconsin Industrial Commission. Mills now have 22,400 wage earners on the rolls, earning $624,000 weekly at an average hourly rate of 65.4 cents. This compares with 22,000 workers in February drawing $607,000 and 21,000 a year ago with payrolls of $526,000.

Payrolls gained 0.6% more than the number of workers from February to March, and the extent to which wage increases have affected the industry are shown by an increase of 18.6% for March over a year ago, while the number of workers increased 6.8%. The average weekly wage is now $27.79 for 42.5 hours.

There has also been a lively stepup in the carton and specialty plants, according to reports from 19 in the Milwaukee metropolitan area. With 1,996 workers on the payrolls drawing $52,083 weekly, the number has increased 5.4% over February, with payrolls up 7%. Average weekly wage is $26.09 for 41.4 hours per week; average hourly rate, 63 cents.

More Power for Paper Mills

Because of the need of increased power by the Falls Pulp and Paper Company, Oconto Falls, Wis., the Wisconsin Michigan Power Company has been granted permission by the Wisconsin Public Service Commission to build a 33,000-volt transmission line to the city from Bonduel, Wis. The project will cost about $108,000. The utility recently purchased a hydro-electric plant at Oconto Falls, but has found it insufficient to meet the load.

The pulp mills of the Falls company have experienced an unusual demand for native pulp, due to the cessation of European shipments, and are being operated to a point where the power supply has been insufficient. Improvements are being made at the mill to increase its production.

Authority also was given by the public service commission to the Wisconsin Michigan Power Company, Appleton, Wis., and the Wisconsin Public Service Corporation, Green Bay, Wis., to interconnect their

(Continued on page 26)

Canada Founded Upon an Economy of Wood

Robson Black and Charles Vining Discuss Leading Points In Canada's Paper and Pulp Industry—Newsprint Single Largest Industry of Dominion Represents An Investment of Over $600,000,000.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 28, 1941—The position of forestry products, particularly newsprint, in Canada's economic picture, was again brought to public attention this week by two authorities on the subject. Robson Black, vice-president and manager of the Canadian Forestry association, has an article on the subject in "Canadian Business," published by the Canadian Chamber of Commerce, and Charles Vining, president of the Newsprint Association of Canada, writes on the same subject in the "Canadian Banker," published by the Canadian Bankers' Association.

Mr. Black declares that products of the Canadian forests, compared with all our other resources and activities, create the biggest reservoir of favorable foreign exchange. Of wood, wood products and paper, Canada in 1940 exported a value of $384,498,000 and imported only $38,100,000 worth, making a favorable trade balance (chiefly in the United States market) of over $310,000,000. This compares with our exports of non-monetary gold which totalled $203,000,000.

Canada Dependent Upon Forests

Canada, according to Mr. Black, is founded upon an economy of wood. More acres of land are used by our forest industry than by agriculture. More men draw wages from lumber and pulp and paper than from any other manufacturing activity.

Mr. Vining, while stressing the importnce of Canada's forestry industry as a whole, concentrates on pulp and paper, particularly newsprint. This product, he points out, represents 75% of total Canadian paper production by value, nearly 60% of total pulp and paper production and nearly 40% of the total dollar output of the Canadian forestry industries. At the present time our newsprint sales abroad represent nearly 50% of total Canadian exports of wood, pulp, paper and related products.

Canada today is easily the dominant factor in the world market for newsprint paper, accounting for over 40% of total world production. Canada produces nearly four times as much newsprint as either the United Kingdom or Scandinavia, which are, in normal times, the next largest producing centres. The Province of Quebec alone turns out more newsprint in a year than Scandinavia and the United Kingdom combined.

U. S. Takes 75% of Canada's Newsprint

For many years Canada has shipped over 90% of its newsprint abroad. The United States market has always absorbed the greatest part of our output, although in recent years an increasing percentage has been shipped to England, Latin America, Australia, South Africa and the Far East. Ten years ago 85% of Canadian output went to the United States, 6% to other export markets and 9% stayed at home. Last year 75% went to the United States, 19% to other export markets and 6% was allotted to Canadian consumption.

Canadian newsprint mills are scattered all across the Dominion. There are 24 companies directly engaged in making newsprint and these companies operate 38 mills, of which 20 are in Quebec, 12 in Ontario, two each in British Columbia and New Brunswick, and one each in Manitoba and Nova Scotia.

Newsprint Big Factor in Power Development

Newsprint is the largest single factor in Canada's hydro-electric development, as Mr. Vining sees it, and accounts for at least 40% of the country's total power consumption. It is calculated that the newsprint represents an investment of between $600,000,000 and $700,000,000, and is our largest single industrial investment, with the exception of railroads and hydro-electric power.

Hon. Earl Rowe, president of Great Lakes Paper Company, Ltd., at the annual meeting this week also stressed the importance of the newsprint industry to the Canadian economy, especially during this war, when Canada requires all the foreign exchange she can get.

History of American Dyes

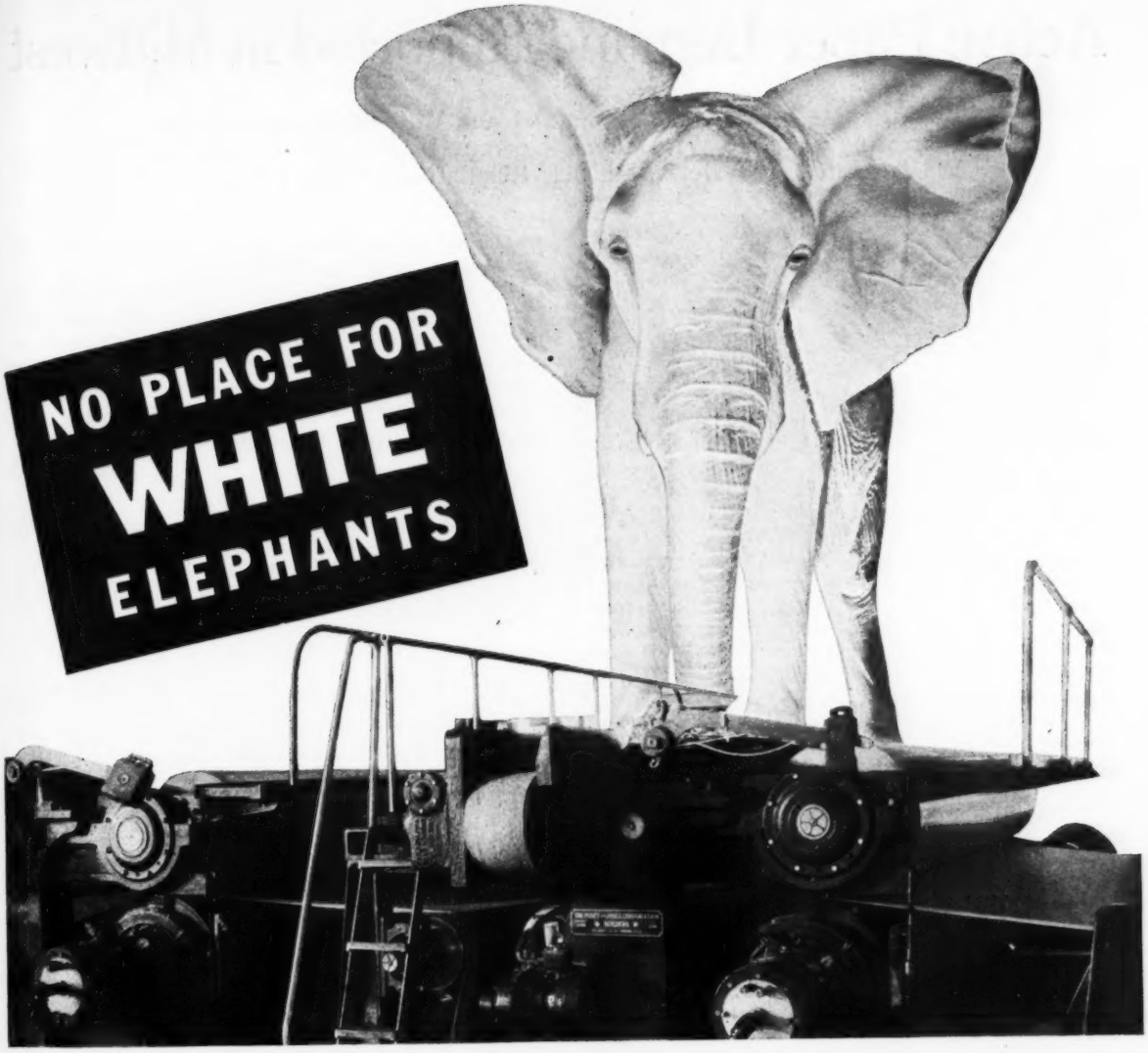
In conjunction with the celebration of its twenty-fifth anniversary, Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J., has prepared "Dyes Made In America," a study of the development of the American dyestuff industry. Written by Williams Haynes, formerly publisher of Chemical Industries, it commences with the critical shortage of chemicals facing this country in 1915. The British blockade created a famine in dyes, bulk chemicals, and pharmaceuticals.

"Dyes Made In America" describes the early beginnings of Calco, how they succeeded by painstaking, day in and day out experiments to make aniline oil, beta naphthol and finally such dyes as methylene blue, crimson and tartrazine.

"Dyes Made In America" presents a conception of the manufacturing efficiency of American producers in a manner probably not presented heretofore. The synthetic colors supplied to the textile industry and other users here are unequalled for tinctorial strength, purity, and uniformity.

American dye users, the writer asserts, have learned that the true cost of a dye depends quite as much upon its concentration as upon its price per pound. Stronger colors mean greater convenience and economy in application, more uniform and satisfactory results. Also, the weighted average price of all American dyes has been brought from $1.26 per pound in 1917 down to 55c in 1937.

Calco's book has been splendidly prepared. It is illustrated with a number of half tones and a series of natural color photographs showing the application of American-made dyes.



Unless top press and smoothing rolls give you better finish, reduce breaks, eliminate pick-ups and generally improve the safety and efficiency of operation, they take up valuable space that should be occupied by STONITE* Rolls. More than 2100 installations *guarantee* the performance of STONITE Top Press and Smoothing Rolls. Why experiment with something "just as good"?

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Stowe-Woodward

THE RUBBER ROLL SPECIALISTS

Newton Upper Falls, Mass.

Active Paper Demand Reported in Midwest

Book Papers Now Reflect Strong Demand With All Lines of Paper Increasingly Active With Trend Upward In Chicago Territory—Waste Material Dealers Plan Self-Regulation—Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 28, 1941—With book papers as the featured item, the entire Chicago paper market closely approached materially higher ground during the past week. The firming process which has been a characteristic of the market, took further form during the week with demand exceptionally good and the raw materials market continuing as a contributing factor to the upward trend. As indicated above, books in particular, took up about all the remaining slack and stands this week as pressing strongly through the present list price. Sulphites were quoted as very firm while groundwood and newsprint papers likewise reported excellent volume and a large number of inquiries. Krafts found the market widening daily with inquiries very strong. Paperboard was very firm with tonnage said to be more than satisfactory as new uses for this product came into play. Bonds and ledgers in general remained strong and covers were following the leadership of book in catching up all slack. Waste papers remained firm in all lines to very strong in certain grades according to local reports.

Murnane Moves To Larger Quarters

Joe Murnane and his successful Murnane Paper Company now are quartered in new, larger and more modern offices and quarters at 700 West Lake Street, just a few blocks from Chicago's loop district. More business and a desire to provide more services for an expanding customer list were quoted as reasons for the enlargement.

Salesmen Plan Golf Outing

Ed. Rolaine, Mosinee Paper Company, took the opportunity at the Monday, April 21, meeting of the western division. Salesmens Association of the Paper Industry, to announce that the first golf outing of the year would be held at the Sunset Ridge Country Club on Friday, May 23. The usual informal luncheon, golf, dinner and prize awards will characterize the opening party with perhaps a bit of "extra" to get the widely increased membership list off on the right foot. The Association has also recently extended a welcome to two new members, E. J. Edwards of the Howard Paper Company and Lawrence J. Walker, representative of the Central Paper Company in this area.

Waste Material Dealers Plan Self-Regulation

Following up on its pledge to give the government all assistance, the Secondary Metal Institute met this week in Chicago and listened to Louis Lippa as he urged wholehearted support of the scrap industry with government defense agencies. Mr. Lippa is the recently elected president of the National Association of Waste Material Dealers. "No one should let individual grievances interfere with the important task of supply items vitally needed for defense purposes," declared Mr. Lippa. Following his remarks, a round table discussion was held with B. R. Cohen of the Metal Institute of Chicago stating that a plan of policing the industry may and should be resorted to if voluntary co-operation with defense officials is not forthcoming. Morton Linn, executive head of the Chicago Waste Material Merchants Association, suggested that the various categories of the industry be given governmental recognition to promote a more equitable price set up.

Exporters Club to Hear About Latin America

John Sokol, head of Sokol & Company, veteran importer who has just completed an extensive tour of South America, will speak at next Thursday's (May 1) luncheon of the Export Managers Club of Chicago. The meeting will be held at the Brevoort Hotel and Mr. Sokol's subject will be "Importing from Latin America."

Strathmore Closes Local Office

It is reported that the Strathmore Paper Company has discontinued its Chicago sales headquarters at 14 E. Jackson Boulevard and that this territory will henceforth be serviced by Nelson Feeley from the main offices of Strathmore in the East. Sam Pace, for a number of years local representative of Strathmore interests, is on leave of absence as first lieutenant in the Army.

Flesch Opens New Firm

Springfield, Illinois, center of mid-Illinois business, has a new paper firm in the form of the E. A. Flesch Paper and Supply Company which has just opened for business at 226 W. Jackson street, in that city. E. A. Flesch organized the company which will handle wrapping paper and paper specialities.

Thilmany to Erect Building

[FROM OUR REGULAR CORRESPONDENT]

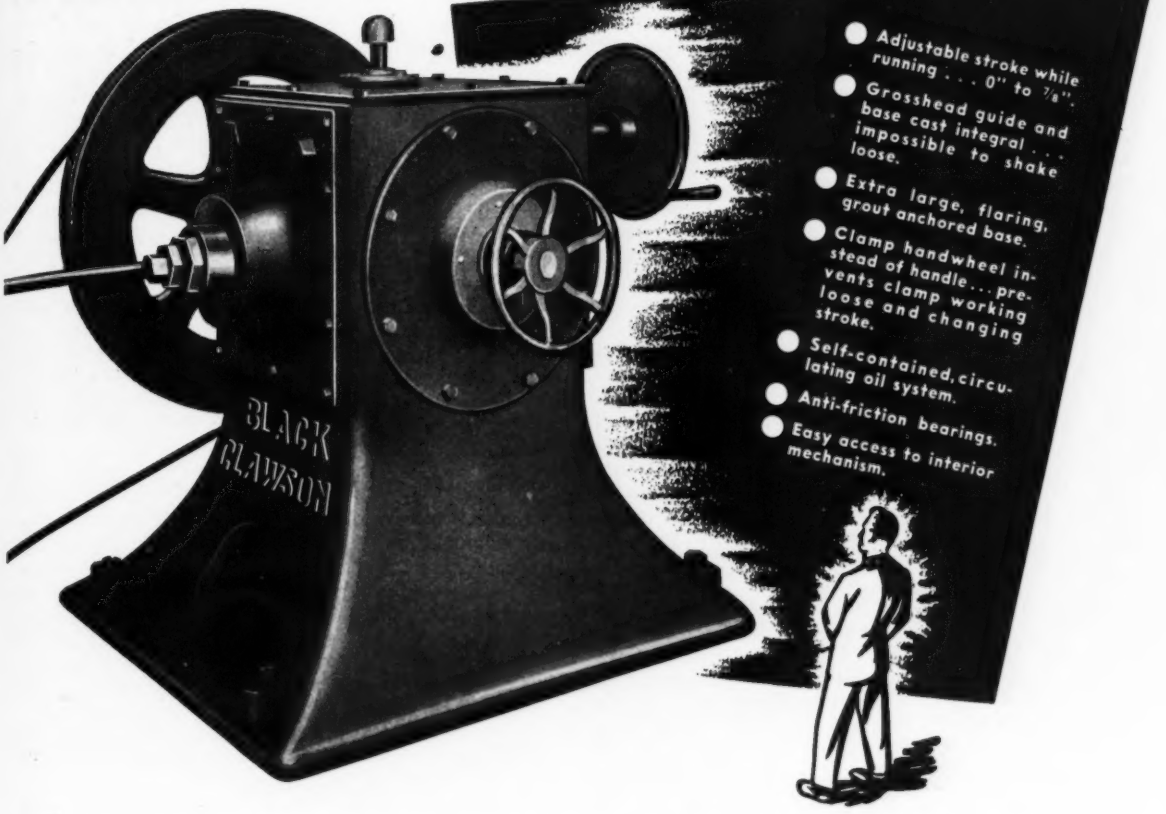
KAUKAUNA, Wis., April 28, 1941—To meet the increased demand for its waterproof and building paper, the Thilmany Pulp and Paper Company has started an expansion program involving expenditures of approximately $75,000, according to C. R. Seaborne, vice-president.

Contracts have been let to the Permanent Construction Company, Milwaukee, Wis., for a reinforced concrete building 52 by 182 feet in size to be located in the upper mill yard on the site of a warehouse recently razed. It will house a new 120-inch asphalt machine to enable the company to laminate rolls of that width. Previously lamination was possible only on rolls up to 84 inches, but paper from its largest machine may now be thus treated.

The building will be equipped with a travelling crane. It will be one story high, with brick exterior to match the other buildings. Construction and installation of equipment will be completed late this summer.

The company will continue to use its 84-inch and smaller asphalt machines.

TAKE A LOOK AT YOUR NEXT SHAKE


BLACK
CLAWSON
Adjustable stroke while running . . . 0" to 7/8".
Grosshead guide and base cast integral . . . impossible to shake loose.
Extra large, flaring, grout anchored base.
Clamp handwheel instead of handle . . . prevents clamp working loose and changing stroke.
Self-contained, circulating oil system.
Anti-friction bearings.
Easy access to interior mechanism.

Check the many important design features and see why you are looking at your next fourdrinier shake.

The ***Black-Clawson*** shake will never pull loose from the floor. The ***Black-Clawson*** shake can be torn down by removing eight cap screws and lifting out sub-assembly. The ***Black-Clawson*** shake has a perfect horizontal stroke with less vibration in the shake stand. The ***Black-Clawson*** shake has all working parts running in oil with no external pipes to run the risk of damage.

If you would like to see the ***Black-Clawson*** shake in operation, say the word. There are many in service, one mill having eight.

The Black-Clawson Company, Hamilton, Ohio
Shartle Division, Middletown, O. Dilts Division, Fulton, N. Y.

THE BLACK-CLAWSON SHAKE

Fine Paper Mills Report Good Business

Good Unit Volume and Stable Prices With Increasing Activity In Retail Sales Favorable To Fine Paper Manufacturers — Gummed Sales At High Level With Difficulty In Getting Raw Stock.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 28, 1941—Fine paper mills in this area report good volume of business, and while they do not seem to think that conditions are abnormal, to use their own expression "We are just nicely busy." A significant feature in this respect is the enlarged unit volume coupled with stabilized prices, all of which tend to make a very favorable impression in all branches of the industry. Increasing activity in retail sales is one of the brightest aspects of the general situation with those in the trade here making an about-face and talking in terms of unbridled optimism happy in the thought that it is not a flashy, feverish expansion but a slow-moving pace of progress.

Paper Stock Market Active

The universal hope and general expectation expressed by the paper stock jobbers some weeks back that there would be a continuance of the upper trend of prices and of mill demand which were experienced last October, is being realized most abundantly in this area. Both are in existence and both give greater promise of continuance than has been experienced in recent weeks. But aside from the eagerness of the mills to buy there is some hesitation on the part of the mills to pay the packers' prices. Coupled with their anxiety to keep raw material up to output demands is the fact that the tremendous increase and stimulus to gather up old waste papers have not resulted in the slightest congestion. As a matter of fact prices that are conceded by those in the trade to be about normal are regarded on the other hand by mills to be high. There seems to be no increase in the amounts of stock being purchased by mills, the opinion is advanced by local merchants that the mills while experiencing an acceleration in business are loath to stock up at present prices which they seem to consider have reached high-water mark.

Gummed Paper Sales High

Representatives of the gummed paper industry report an unprecedented volume of business but state they are handicapped in making deliveries because they are unable to get their quota of raw materials. Every possible pound of material that can be secured is being rapidly converted in order to supply the demands with deliveries being made more or less on the pice-meal basis in order to keep the customers supplied.

Hooper Co. Celebrates 20th Anniversary

On Tuesday, April 22, the Hooper Paper and Twine Company with sixteen of its employees celebrated the twentieth anniversary of its existence at Shoyers' Restaurant, 412 Arch street. After dinner, George K. Hooper, president, awarded cash prizes to the employes who were divided into two teams captained by Preston T. Rhodes and James T. Stewart, both teams coming off with a goodly share of awards. The awards were made on the basis of points which the employes on both teams piled up during the year for sales on discontinued items, new items and customers and the revival of old accounts. Those who had been with the company twelve, sixteen and eighteen years indulged in retrospection and traced the evolution of the company from the time it started on the second floor of 145 south Front street, where it remained eight years, afterward moving to larger quarters at 270 South American street. After a three years' stay at the South American address the building at 105 Church street, containing five floors and modern facilities affording 12,000 square feet, was leased. Within two years the fine paper forged ahead necessitating more space and facilities, at which time 103 Church street was added to its warehouse space thus permitting the enlargement of the sales and display rooms, which is one of the most spacious and up-to-date in this section. The major part of this firm's business has been fine papers, which with the addition of Permanized Papers, made by Whiting-Plover Paper Company, Stevens Point, Wisconsin, has materially increased fine paper sales.

Hammermill Employees at Rodeo Party

Special cars for employees of the Hammermill Paper Company and General Electric Company on the Special Nickel Plate train were necessary to carry the Dispatch-Herald rodeo party to Cleveland on Sunday a week ago. Large delegations of both plants made the trip to Cleveland to see the fourth annual rodeo with Gene Autry and his famous horses heading the show. The Hammermill and General Electric were well represented on the ice-capades special several weeks ago, and everybody had such a good time that employes began at once to organize their groups as soon as the rodeo party was announced.

The matinee performance of the rodeo started at the Cleveland Arena at 2:15 p.m. and lasted until nearly 5 o'clock. After dinner and a show the special train departed for Erie at 10 p.m. and arrived at its destination about midnight.

Brunswick Paper Co. Holds Election

Officers and directors of the Brunswick Pulp and Paper Company, Brunswick, Ga., have been reelected for the year.

At the election of directors the following were named to serve for the coming year: George H. Mead, C. R. Van de Carr, Jr., H. E. Whitaker, Sydney Ferguson; Alfred W. Jones, Millard Reese, T. B. McCabe, W. S. Campbell, R. C. Mateer, F. W. Brainerd, E. J. Gayner, III.

At the meeting of the directors officers for the year were elected, as follows:

George H. Mead, chairman of board; Chas. R. Van de Carr, Jr., president; Sydney Ferguson, vice-president; W. S. Campbell, vice-president; E. J. Gayner, III, vice-president and general manager; W. R. Scott, III, secretary; G. W. Pepper, treasurer; Wm. S. Canney, comptroller; J. H. Cunningham, assistant comptroller; J. C. R. Whitley, assistant secretary-treasurer.

Paper and Pulp and National Defense

Following a meeting of the industry committee held in Washington, D. C., on March 26, which considered the ability of the paper and pulp industry to meet defense and consumer requirements arising from the National Defense Program, a report was prepared by the Advisory Committee for the Pulp and Paper Industry to the Council of National Defense, 122 East 42nd street, New York.

This report was prepared with the assistance of the American Paper and Pulp Association, its affiliated divisions, the National Paperboard Association, and the Newsprint Manufacturers Association of the United States. The report indicates adequate surplus of installed capacity over and above the requirements estimated by the Government.

The important factors disclosed in this study are: (1) Pulpwood—There are adequate supplies of pulpwood in the forests of the United States and Canada to meet all anticipated requirements. (2) Wood Pulp—The cessation of European imports created a new situation which was promptly recognized by both Canadian and American producers with the result that production has been increased to the point where supplies will meet 1941 needs. It is recognized that there may be some difficulties in certain special qualities of wood pulp. These difficulties can be met by slight adjustments of paper qualities. (3) Waste Materials—There can be made available a greatly extended supply of waste materials that can be substituted for virgin wood pulp in case the demand arises. The availability of such supplies is only a question of an adequate incentive to assure their collection and marketing. (4) Paper and Paper Board—There is a more than adequate installed productive capacity to meet the increase in demand for paper and paper board anticipated during the remainder of 1941. Here again it is recognized that minor changes in qualities may be necessary in isolated instances which in tonnage represent a small percentage of the total.

UNITED STATES NORMAL PAPER-PRODUCING CAPACITY, ESTIMATED REQUIRED DOMESTIC PRODUCTION AND ESTIMATED QUANTITY OF WOOD PULP NECESSARY TO MEET REQUIRED PAPER PRODUCTION—1941

(Tons of 2,000 Pounds)

Paper Capacity and Required Production

Kind of Paper	Normal Annual Capacity * 310-Day Basis (Incl. Idle Mills & Equip.)	Domestic Production Requirements—1941 (As Estimated by O. P. M.)
Newsprint	1,080,000	1,030,000
Paperboard	8,400,000	7,450,000
Wrapping	2,950,000	2,682,000
Kraft	1,700,000)	
Sulphite and Other	1,250,000)	
Book	2,105,300	1,865,000
Fine	804,200	735,000
Writing	758,000)	
Cover	30,000)	
Text	16,200)	
All Other	2,691,800	2,455,000
Groundwood	700,000)	
Tissue	793,000)	
Building	938,000)	
Other	260,800)	
Total	18,031,300	16,217,000

* 310 Days are used as a normal measure of capacity. The industry can substantially exceed this number of days and many mills ordinarily run at a higher figure.

A substantial portion of the productive capacity in the paper industry may be shifted between the various grades. This is more particularly true of certain grades than others, but, in general, and particularly under emergency conditions, great flexibility is possible.

V-Belt Data Book Issued

The fourth edition of the Condor V-Belt Engineering Data Book, revised to include horsepower specifications recently adopted is being distributed by The Manhattan Rubber Manufacturing Division, Passaic, N. J. Machine designers, engineers, jobbers and instructors may obtain the book by writing the manufacturer.

The book is divided into two parts. The first part covers standard drives eliminating the necessity of working out calculations, and the second, sheave factors and other data for designing new or special drives. It also contains belt comparison tables, illustrations, and other general information.

Quadrafos

A booklet describing the properties of Quadrafos (sodium tetraphosphate) has recently been issued by the American Cyanamid and Chemical Corporation, 30 Rockefeller Plaza, New York. The publication discusses the water-conditioning power of the Quadrafos brand of sodium tetraphosphate, effect upon calcium and magnesium, etc., and various other properties. A few of many industrial applications of this chemical are also listed.

Industrial Chemicals

A revised catalogue of industrial chemicals has been issued by the American Cyanamid and Chemical Corporation, 30 Rockefeller Plaza, New York. It lists the company's large line of chemicals and allied products. Data briefly descriptive of the products used in the paper and pulp and in other industries are conveniently arranged in alphabetical order.

ESTIMATE OF WOOD PULP REQUIRED TO MAKE ESTIMATED PAPER PRODUCTION IN 1941

Based upon distribution of materials used in 1939 as reported by the Bureau of the Census, with some adjustments in groundwood and sulphate pulps

(Quantities in Thousands of Short Tons)

Paper Grades	Required Paper Production	Wood Pulp Requirements: Total	Groundwood	Sulphite: Bleached	Sulphite: Unbleached	Sulphate: Bleached	Sulphate: Unbleached	Soda	Semi-Chemical
Newsprint	1,030	1,081	873	....	208	....	....	....	....
Paperboard	7,450	2,830	110	186	208	213	1,955	....	158
Wrapping	2,682	2,812	142	284	397	255	1,734	....	....
Book	1,865	1,272	59	356	257	87	....	513	....
Fine	735	678	....	498	117	63	..	....	....
All Other	2,455	1,791	799	420	417	77	53	25	....
Total	16,217	10,464	1,983	1,744	1,604	695	3,742	538	158

Six per cent shrinkage factor used. Non-fibrous content in finished product subtracted.

Hold Ladies Night at Kalamazoo

KALAMAZOO, Mich., April 28, 1941—The Annual Ladies Night Dinner and Dance given by the Michigan Division of the Superintendents' Association was held at the Park American Hotel on Saturday evening, April 19, 1941. This yearly function is easily the outstanding social event sponsored by associates of the paper industry, and the 1941 Party exceeded all former ones, in attendance, efficiency in handling, and entertainment afforded those attending.

An innovation this year which met with hearty acclaim was the reception given previous to the dinner in the new Colonel's Green Room adjacent to the main dining room. The reception, of which Olin W. Callighan was the general chairman and which was sponsored by twenty allied concerns, provided the opportunity for all members, their wives, and guests to get acquainted and enjoy the courtesies tendered by the group, making a gracious prelude to the main event.

F. B. Eilers Acts as Toastmaster

Following the satisfactory and well served dinner by Host W. D. Sanders and Mrs. Sanders, President Arnold Weller announced that L. L. "Buster" Griffiths had been originally delegated to serve as toastmaster but on account of "Buster" being confined in the hospital with a "strep" throat, Frank B. Eilers had kindly accepted the request to substitute. Frank proved to be an excellent choice and kept the program moving with circus-like snap.

Honored guests were introduced, including Ed Thom of Montreal; Mr. and Mrs. Roy H. Kelly of the Marathon Paper Company; Mr. and Mrs. Claude Sorg of the Sorg Paper Company; and National Secretary Robert L. Eminger and Mrs. Eminger; Miss Besse Merrithew, editor, *Paper Industry;* and Mrs. Helen King, president, Rex Paper Company. All Past Presidents of the Michigan Division were also called upon including Ed T. Coughlin, a Past National President.

Following the drawing of the Ladies' and Men's Door Prize, an elaborate floor show was the entertainment, then dancing until one A. M.

Those in Attendance

Among those attending were—Mr. and Mrs. James M. Alden, Mr. and Mrs. Richard C. Alden, Mr. and Mrs. Wm. H. Astle, Mr. and Mrs. Ray Barton, Mr. and Mrs. Charles Beachan, Mrs. Jacob Boodt, Robert Buss, Mr. and Mrs. Olin W. Callighan, Mr. and Mrs. K. N. Chappell, Mr. and Mrs. Fred Chappell, Mr. and Mrs. A. W. Cole, Miss Conine, Mr. and Mrs. E. T. A. Coughlin, Mr. and Mrs. N. J. Cowie, Wayne Crotty, Mr. and Mrs. Robert Crowell, Mr. and Mrs. W. G. Curry, Mr. and Mrs. Joe Deys, Mr. and Mrs. Jack Dickson, Mr. and Mrs. F. B. Eilers, Mr. and Mrs. Russell Elliott, J. J. Ely, Mr. and Mrs. R. L. Eminger, Mr. and Mrs. O. T. Fischer, Mr. and Mrs. M. S. Fogerty, Mr. and Mrs. A. W. Gilchrist, Mr. and Mrs. M. Gillender, Mr. and Mrs. Bert Gilman, Mr. and Mrs. G. Graham.

L. L. Griffiths, Jr., Mr. and Mrs. W. B. Hadley, Mr. and Mrs. H. Heath, Vivian Heinmuller, Mr. and Mrs. R. W. Holden, Mr. and Mrs. Bill Hobson, Mr. and Mrs. Fred Hodgemire, David Howard, Mr. and Mrs. P. G. Isvolt, Mr. and Mrs. R. H. Kelly, Mrs. Helen R. King, Mr. and Mrs. Dave Klausmeyer, Mr. and Mrs. L. La Liberte, Mrs. Evelyn Lemon, Mr. and Mrs. M. Longanecker, Mr. and Mrs. Lloyd J. Lynd, Mr. and Mrs. Phil Maher, Mr. and Mrs. C. F. McAleer, C. J. McMahon, Mr. and Mrs. Hoke Martin, Mr. and Mrs. R. T. Mashburn, Mr. and Mrs. K. C. Melenbacker, Lion H. Memms, Miss Besse Merrithew, Mr. and Mrs. L. M. Mongrieg, Mr. and Mrs. Bob Nendorf, Mr. and Mrs. Henry Nendorf, Mr. and Mrs. C. H. Noble, Mr. and Mrs. C. H. Noble, Jr.

Mr. and Mrs. Ed. Osborn, Mr. and Mrs. Jacob Parent, Marie L. Pascheu, Mr. and Mrs. Al Perlick, Mr. and Mrs. R. W. Polleys, D. T. Quirk, Mr. and Mrs. Charles B. Rader, Mr. and Mrs. Asa P. Rice, Mr. and Mrs. Gorge H. Rice, Mr. and Mrs. M. J. Roe, Mr. and Mrs. J. Ruimveld, Maxine Schays, Mr. and Mrs. Joe Scheurrman, Mr. and Mrs. Louis J. Scheid, Mr. and Mrs. G. C. Schmid, Frank F. Schmiege, Walter L. Shaw, Mr. and Mrs. Fred K. Shankweiler, A. L. Sherwood, Mr. and Mrs. R. W. Shew, Mr. and Mrs. George Shinners, Mr. and Mrs. Claude A. Sorg, Homer Stafford, H. E. Stratton, Robert B. Stewart, Mr. and Mrs. Glen Sutton, Mr. and Mrs. C. W. Swanson, Peter A. Talbot, Ed. J. Thom, Mr. and Mrs. John Tooker, Mr. and Mrs. C. E. Van Buren, John Vanderkolk, Mr. and Mrs. Arthur Van Ernst, Mr. and Mrs. James R. Verdon, Mr. and Mrs. Joe Waber, Mr. and Mrs. J. H. Weber, Arnold Weller, Walter Wolfe and Mr. and Mrs. Art E. Woollam.

Northwest Division To Meet

Much interest is being expressed toward the spring meeting of the Northwest Division of the American Pulp and Paper Mill Superintendents Association, to be held in Marinette, Wis., May 23 and 24. A record breaking attendance is expected from the surrounding Great Lake States area, which is noted for its importance and prominence as a center of paper manufacturing.

Those attending the spring meeting will have an opportunity to visit mills in Marinette and Peshtigo where many forms of paper are produced. Visits to other mills in the adjacent terriory will also be possible, where many other types of paper are produced.

Marinette has long been famous for its hospitality. It is an ideal location for the spring meeting because it affords visitors an ideal hotel and restaurant, also plent of opportunity for golf, fishing, yachting and other mediums of recreation and entertainment.

The business program of the two day meeting will include mill visits, a round table discussion of paper making and mill problems and a very carefully selected program of technical papers to be given by well known authorities in their respective fields.

Every effort is being exerted by the committee in charge of the spring meeting to make it unusually interesting and profitable for all northwest Division members who will attend. The committee urges members to complete their plans now, to be on hand for this spring session and asks that reservations be sent in as soon as possible to John V. Ziemann, Southern Kraft Corporation, Marinette, Wis.

More Answers to WHO IS DOING WHAT with

SPEED RANGES UP TO 16 TO 1 AN ALL-ELECTRIC ADJUSTABLE-SPEED DRIVE FOR A-C. CIRCUITS SIZES—1 to 30 HP.

RELIANCE V★S DRIVE

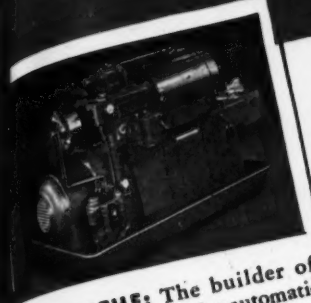
1. A DIRECT DRIVE. Fewer parts and less space because the drive is direct—there's no intermediate speed-changing device.

2. CONTROL—Within easy reach. There's nothing to limit convenience. Put speed adjuster and start-stop button in a handy spot and run a wire to them.

3. FROM A-C. POWER CIRCUIT. The many advantages of this drive are made possible at a new low price by the "packaged" V★S Speed Control Unit which is connected by three wires to a 3-phase a-c. power circuit.

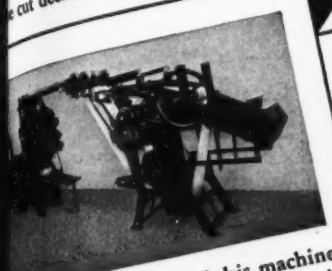
ALSO—Quick stopping, reversing, safe speeds for threading, ample starting torque with smooth acceleration, speed setting. Bulletin 310.

RELIANCE ELECTRIC & ENGINEERING CO.
1082 IVANHOE ROAD • • CLEVELAND, OHIO
Sales Offices in Principal Cities

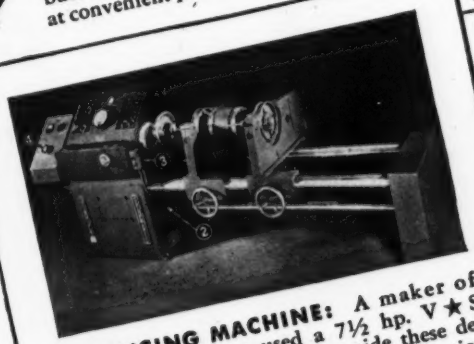


MATIC LATHE: The builder of utomatic lathe arranged for automatic ration of the V★S Speed Changer from ame mechanism which moves the tool. a facing operation the motor speed is ried automatically as the diameter of e cut decreases.

SANFORIZER: A textile mill placed these two V★S Speed Control Units and driving motors in the basement to supply power for two Sanforizers on the floor above. Start-stop buttons and speed adjusters are placed at convenient points on the Sanforizer.

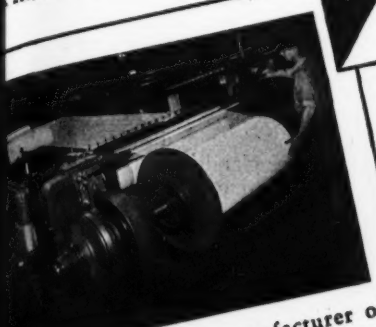


MACHINE: The user of this machine roduce paper flour sacks up to a maxi- of 200 a minute. Whatever the operating ditions, it is possible to adjust for speeds best overall results by means of the 7½ 218/1750 rpm. Reliance V★S Drive.

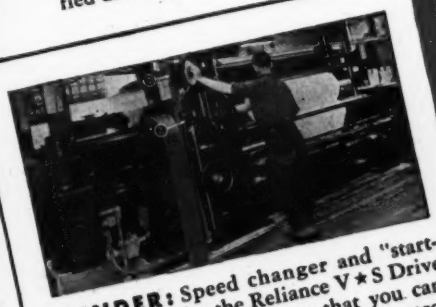


BALANCING MACHINE: A maker of balancing machines used a 7½ hp. V★S Drive on this machine to provide these desirable advantages: (1) smooth acceleration (2) quick stopping by dynamic braking (3) wide range of operating speeds (4) simplified driving parts.

PRESSURE PUMPS: Plants in the process industries are using V★S Drives on pumps to maintain accurate control of pressures over wide ranges. Mixing batches of materials uniformly means an improved product.



RAYON SLASHER: A manufacturer of rayon slashers provides convenient and accurate control over an operating range of 2½ to 62½ yards a minute by applying a 7½ hp. Reliance V★S Drive.



WINDER: Speed changer and "start-stop" button for the Reliance V★S Drive may be placed anywhere that you can run a wire. Grouped with other control elements as done by the builder of this paper winder, they make "centralized control" complete.

"STREAMLINE IT!"
The Reliance V★S Drive enables you to apply power closer to the place where your power is needed. It helps take humps and bulges out of your machines—aids efficient, streamlined design. Ask for a copy of our *new* Bulletin No. 310.

RELIANCE ELECTRIC & ENGINEERING CO.
1088 IVANHOE ROAD • • • CLEVELAND, OHIO

OFFICES IN BOSTON, BUFFALO, CHICAGO, CINCINNATI, DETROIT, GREENVILLE, S. C., LOS ANGELES, NEW YORK, PHILADELPHIA, PITTSBURGH, MINNEAPOLIS, HOUSTON, PORTLAND, ORE., ST. LOUIS, SAN FRANCISCO, SEATTLE, U. S. A. AND OTHER PRINCIPAL CITIES

RELIANCE A-C D-C MOTORS

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 30, 1941—Whitaker Paper Company has been awarded the contract for furnishing the Government Printing Office with 11,760 pounds (84,000 sheets) of 31½ x 48 wood manila paper at 4.69 cents, bids for which were received on April 9.

Mudge Paper Company will furnish 16,362 pounds (37,700 sheets) of 36 x 42½ buff sulphite index paper at 6.81 cents, bids for which were received on April 7.

Perkins-Goodwin Company will furnish 152,380 pounds of antique printing paper in 38 inch rolls at 4.84 cents.

Also Stanford Paper Company will furnish the following buckeye white whipplie finish cover paper at 11.6 cents; 54,000 pounds, of 34¾ x 64; 54,000 pounds same, 43 x 56¾; 54,000 pounds same 34¼ x 50; 54,000 pounds same, 43 x 57; 54,000 pounds same, 34½ x 53¾, and 54,000 pounds, same, 36½ x 54¼.

Barton, Duer & Koch Paper Company will furnish 77,888 pounds of U. S. postal card bristol board at 5.4 cents and the same firm will furnish 18,597 pounds, same 32 x 42 at 5.4 cents.

Marquette Paper Company will furnish following offset book paper; 80,000 pounds, 45¾ x 64 at 5.7 cents; 80,000 pounds 43 x 67⅝ at 5.87 cents; 80,000 pounds 34½ x 50 at 5.87 cents; 80,000 pounds 43 x 67¾ at 5.7 cents; 80,000 pounds 34½ x 53¾ at 5.7 cents; and 80,000 pounds 43 x 57 at 5.87 cents.

Paper Bids Received

The Printing Office has received the following bids for 9,617 pounds (63,000 sheets) of 34 x 50 white sulphite writing paper; Barton, Duer & Koch Paper Company, 6.16 cents; Stanford Paper Company, 7 cents; and R. P. Andrews Paper Company, 5.9 cents.

For 81,900 pounds (252,000 sheets) of ivory offset paper; Aetna Paper Company, 6.98 cents; Paper Corporation of U. S., 7.2 cents; Marquette Paper Company, 7.18 cents; R. P. Andrews Paper Company, 7.19 cents; and Stanford Paper Company, 6.5 cents.

For 151,200 pounds (756,000 sheets) of 45 x 52 white sulphite writing paper; R. P. Andrews Paper Company, 5.9 cents; Barton, Duer & Koch Paper Company, 5.91 cents; Old Dominion Paper Company, 6.493 cents; and Marquette Paper Company, 6.44 cents.

For 5,820 pounds (30,000 sheets) of 21 x 32½ buff index sulphite paper; Paper Corporation of U. S., 7.2 cents; Mudge Paper Company, 7.19 cents; Virginia Paper Company, 8 cents; Old Dominion Paper Company, 8.48 cents; R. P. Andrews Paper Company, 7.49 cents; Whitaker Paper Company, 7.3 cents; Barton, Duer & Koch Paper Company, 7.23 cents; and Stanford Paper Company, 7.3 cents.

For 35,100 pounds (225,000 sheets) of 38 x 48 lithograph finish map paper; Old Dominion Paper Company, 9.73 cents; R. P. Andrews Paper Company, 8 cents; Barton, Duer & Koch Paper Company, 9.19 cents; and Mudge Paper Company 9.9 cents.

For 48,240 pounds of 25% rag, white bond paper; Aetna Paper Company, 9.72 cents; R. P. Andrews Paper Company, 12.24 cents; Stanford Paper Company, 10.22 cents; Mudge Paper Company, 10.24 cents; Paper Corporation of U. S., 11.5 cents; and Walker, Goulard Plehn Company, 13.9 cents.

For 18,525 pounds of 50% rag, green ledger paper; R. P. Andrews Paper Company, 16.63 cents; Barton, Duer & Koch Paper Company, 13.5 cents; Stanford Paper Company, 20 cents; Mudge Paper Company, 11.55 cents; and Walker, Goulard Plehn Company, 13.9 cents.

For 34,242 pounds of light blue cover paper in 36 and 24 inch rolls; R. P. Andrews Paper Company, 10 cents; Barton, Duer & Koch Paper Company, 7.5 cents; Stanford Paper Company, 7.75 cents; Cauthorne Paper Company, 7.233 cents; Marquette Paper Company, 7.73 cents; and Mudge Paper Company, 7.69 cents.

For 196,872 pounds of white sulphite writing paper Sub. 32; Perkins-Goodwin Company, 5.67 cents; Barton, Duer & Koch Paper Company, 5.65 cents; and Marquette Paper Company, 6.52 cents.

For 301,470 pounds same Sub. 40; Perkins-Goodwin Company, 5.67 cents; and Marquette Paper Company, 6.22 cents.

New Flexible Coupling

The Falk Corporation, Milwaukee, Wis., announces a new type of flexible coupling, the Falk "Airflex".

This coupling is especially designed for connecting Diesel, oil, gasoline, or gas engines to any type of driven machinery. It is an excellent coupling for use with motor driven compressors, single cylinder pumps and other driven equipment of a similar fluctuating torque nature.

The Falk Airflex Coupling is built to satisfy the need for a flexible coupling in which the degree of resiliency can be readily changed to suit the exact requirements of a particular application. It decreases peak torque values when either the prime mover or driven equipment has a high fluctuating torque characteristic.

The Falk Airflex Coupling consists of a special resilient rubber gland lined with a pre-moulded, prevulcanized cylindrical section especially treated to prevent air loss. This cylindrical lining is covered with multiple alternating layers of tough durable fabric and live rubber. The entire gland is permanently bonded to rugged steel inner and outer rims.

The gland is inflated to proper pressure through a specially designed standard thread Schrader valve which will take any hand pump fitting or air nozzle. A rubber covered metal cap prevents foreign material from entering the valve.

The degree of elasticity in this coupling can be varied by changing the air pressure. This frequently eliminates the necessity for adjusting the setting of the connected units, or making changes in shaft diameters and lengths or in the flywheel, to alter the torsional characteristics of the drive system.

Falk Airflex Couplings are made in six standard types so that the type best suited to the requirement can be applied with the minimum of special work.

NO BETTER REASON FOR USING REX ROLLER CHAIN BELTS!

① **"WHAT DO YOU MEAN?"** asked this mill engineer. "Why should your roller chain belts last longer than others? They don't cost more and don't look any different. What's the reason, if any?"

② **"YES," I SAID, "THEY ARE** similar in appearance and in price. But, in design, in lubrication methods, in wearing qualities and in background Rex roller chain belts are in a class by themselves!

③ **"THAT'S WHY IN SO MANY MILLS** Rex roller chain belts are first choice—they last far longer. They postpone replacement worries and eliminate a lot of delays formerly due to breakdowns.

④ **"WE MAKE ALL SIZES AND TYPES—** over 2000, to put it in round numbers. We can give you the *proper* chain belt for your job, whether it's for power at low speed or efficiency at high speed!"

⑤ **"THAT'S LOGICAL,"** he said, "and I never thought of it. You don't have to solve every problem with one chain belt. Where's the whole story on your line?—I'd like to investigate when I get time."

⑥ **"RIGHT HERE IN OUR NO. 444 CATALOG** —768 pages of data on every type of chain belt you'll ever need. Use it when designing drives and conveyors throughout your mill and you'll never go wrong."

P.S. *Before you buy any chain belt for use on new or for replacing existing drives and conveyors, send for Catalog No. 444 mentioned in this imaginary conversation. Then we believe you'll want to see the Rex Man. Address, 1605 W. Bruce Street, Milwaukee, Wisconsin.*

REX CHAIN BELTS

CHAIN BELT COMPANY OF MILWAUKEE

Baldwin-Duckworth Chain Belt Division, Springfield, Massachusetts • Worcester, Massachusetts
Rex Chain Belt and Conveyor Divisions, Milwaukee, Wisconsin

50TH ANNIVERSARY 1891 REX 1941 CHAIN BELT COMPANY

Almon A. Bush Dead

Almon A. Bush, vice-president of E. D. Jones & Sons Company, and identified with that organization for 39 years, died on April 1, at the House of Mercy in Pittsfield. He had been ill for six weeks. The funeral services were held on April 3, with burial at the Pittsfield Cemetery.

Mr. Bush was born in Otsego, Mich., September 13, 1863. He became associated with the Jones Company as a salesman in 1902. In that capacity he

ALMON A. BUSH

travelled extensively throughout the world, including trips to Europe, China, and Japan. He was particularly well known in the Paper Mill and Machinery Trade in this country.

In 1928, Mr. Bush was elected a director, vice-president and manager of the E. D. Jones & Sons Company. He retired in 1935, but retained the office of vice-president. He was a member of the Technical Association of the Pulp and Paper Industry and during the period of NRA worked on committees relative to codes for the Paper Mill Machinery Trade.

Mr. Bush held membership in the Crescent Lodge of Masons, Knights Templar and Melha Temple of Shriners. On January 4, 1938 Mr. and Mrs. Bush observed their 50th wedding anniversary.

Mr. Bush is survived by Mrs. Bush, a son, Roland, of White Plains, N. Y., a daughter, Mrs. Ethel Bush Hall of Schenectady, N. Y. and 5 grandchildren.

R. S. Kellogg Speaks on Canada

BROOKLYN, N. Y., April 30—"An unbroken record of 125 years' freedom of travel, extensive trade and exchange of populations between the United States and Canada lies behind the closer military and economic ties now binding the two countries in a common cause," said Royal S. Kellogg, secretary of the News Print Service Bureau, speaking to the Kiwanis Club of Bush Terminal today in connection with the Kiwanis International Canada-United States Goodwill Week.

"Canada is a country of vaster area, larger resources and more opportunity for still further development than most people south of the border realize. Her mineral output is constantly being augmented by fresh discoveries, her forests and water powers make her the producer of nearly half of the world's news print paper, and her gold output is $200,000,000 yearly. Canada's patriotic and industrious population have made her a major source of supply for war effort by the British Commonwealth of nations.

"Canadian troops are in active service from the West Indies to Iceland to England. Canadian planes are making a fine record overseas, and the Canadian Navy has convoyed 3,700 vessels since the war began. Canada's direct war effort will cost her people $1,450,000,000 in the current fiscal year, in addition to which she will furnish Great Britain $1,500,000,000 worth of war supplies, raw materials and agricultural products. This means that the Canadian people are facing a total tax burden in the next fiscal year of 44 per cent of the national income—and they are facing it like the men we know them to be.

"Canada is a delightful place for the American tourist to visit, whether in the old maritime provinces, along the historic St. Lawrence, around the Great Lakes, or in the Rocky Mountains and on the Pacific Coast. A hearty welcome awaits every American citizen and his dollar will buy $1.10 worth of Canadian goods and services without exception. There are no difficulties or delays about ingress or egress if one has the simplest kind of proof of United States citizenship or an honest face. Every American dollar spent in Canada is at once turned over to the Foreign Exchange Control Board and used to pay for goods bought in the United States. In some years this has amounted to $250,000,000—and it is needed now more than ever before.

"North America north of the Rio Grande," concluded Mr. Kellogg, "is a natural economic unit with a population of largely common heritage and like traditions. It has now become an active economic entity for the accomplishment of one fundamental purpose—to keep the earth a fit place for free men to live."

To Build Largest Box Plant

The Grand City Container Corporation, one of the largest manufacturers of paper boxes and cartons in this country, will consolidate its entire facilities in a massive plant at North Bergen, N. J.

Basis for the announcement was passage of a resolution, at a special meeting of the Board of Commissioners, authorizing Mayor Cullum, to sell at public auction Tuesday, May 6, a tract of land comprising 12 acres on the west side of U. S. Route 1 (Tonnele avenue), north of 69th street, part of the old Brewster Quarry property.

The resolution stipulated that no bid less than $10,000 will be accepted for the property with an agreement in writing that the purchaser will begin construction within ninety days of a building having a total floor space of 300,000 square feet. It is believed that the building, which will be a one-story structure with the exception of an upper floor in the front for offices, will be the largest of its kind in the county.

Present offices of the company are at 622 West 57th street, New York City. One of the plants is located there. Another is in Brooklyn.

The Grand City Container Corporation has three subsidiaries. Two are located in the New York and Brooklyn plants. They are the G. and B. Bakers Supplies, manufacturing corrugated liners for the confectionery trade, and the Federal Carton Company, manufacturing set-up and folding paper boxes. The third plant, a branch in Albany, N. Y., known as the Capitol City Container Corp., will be continued.

Officers are Eilas Stein, president, and Bernard Rous and Irving Dorfman, vice presidents.

STOP WET-END BEARING TROUBLE WITH SUPERLA GREASE

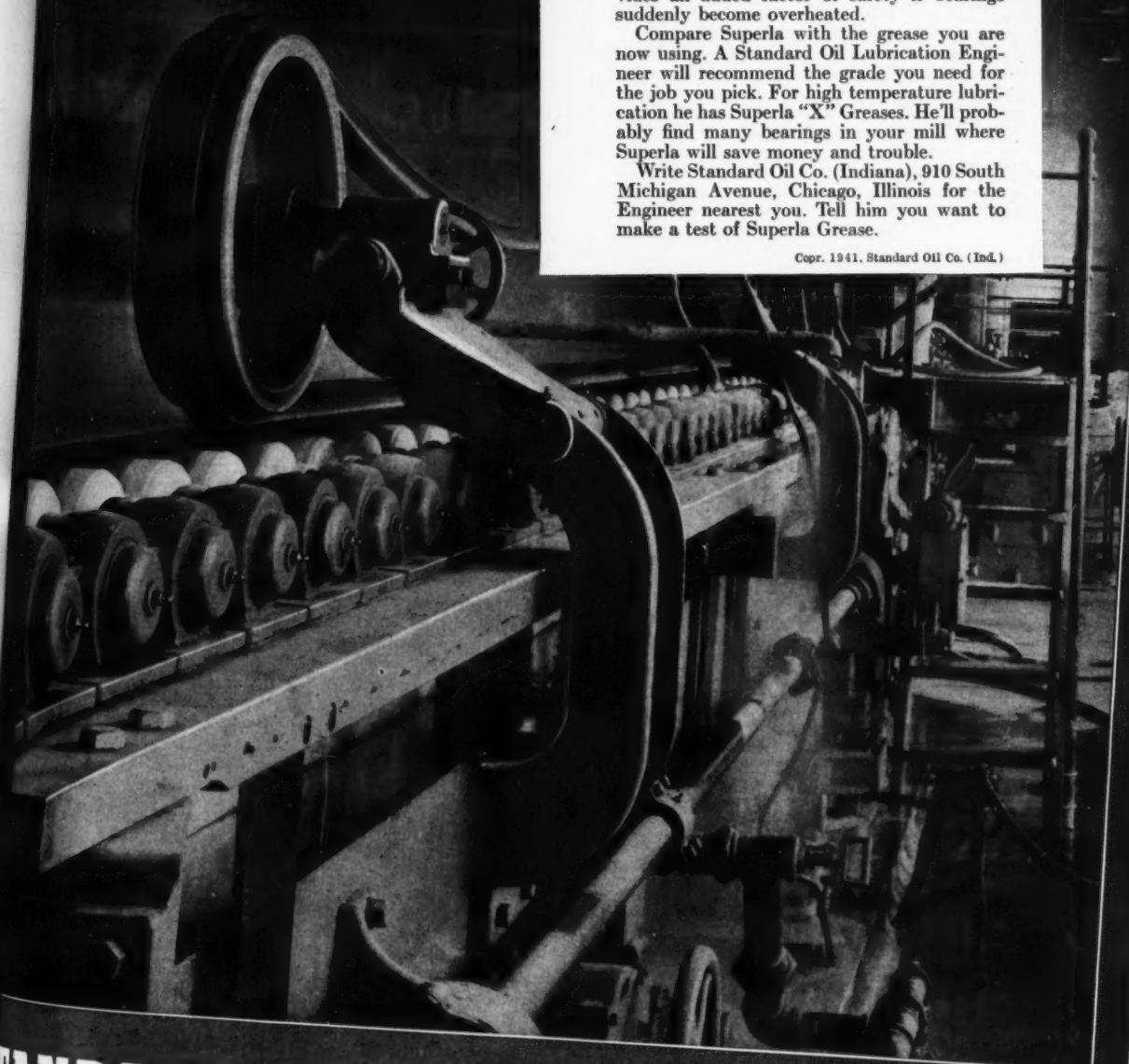
● OIL LEAKAGE from grease-lubricated bearings is unsightly. But there's a more serious angle. Leakage may mean that the oil and soap, of which the grease is composed, have "separated." The soap remaining in the bearings has little lubricating value. It hardens or cakes, clogs passages and grooves, and increases bearing wear.

With some greases this separation takes place after comparatively short periods of use. Another common cause is a sudden rise in bearing temperatures. Superla Grease reduces both of these hazards. In anti-friction bearings, such as those on wire screen rolls where temperatures are normal, Superla will not separate even after long periods of service. Even when bearing temperatures become abnormally high, causing the grease to separate, the soap in Superla tends to remain soft and pliable, instead of becoming hard and brittle. This provides an added factor of safety if bearings suddenly become overheated.

Compare Superla with the grease you are now using. A Standard Oil Lubrication Engineer will recommend the grade you need for the job you pick. For high temperature lubrication he has Superla "X" Greases. He'll probably find many bearings in your mill where Superla will save money and trouble.

Write Standard Oil Co. (Indiana), 910 South Michigan Avenue, Chicago, Illinois for the Engineer nearest you. Tell him you want to make a test of Superla Grease.

Copr. 1941, Standard Oil Co. (Ind.)



TANDARD OIL COMPANY (INDIANA)

RING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRI

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending April 30, 1941

	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	27½	25¾	25¾
Celotex Corp.	9⅜	9	9⅛
Celotex Corp., pf.	67¼	66¾	66¾
Certain-Teed Products Corp.	3¼	3	3
Certain-Teed Products Corp., pf.	25	23¼	24½
Champion Paper & Fibre Co.	18	17½	17½
Champion Paper & Fibre Co., pf.	105	104½	105
Congoleum-Nairn Co.	15	14	14⅜
Container Corp. of America	13¼	13⅛	13⅛
Continental-Diamond Fibre Co.	7⅞	7¾	7¾
Crown-Zellerbach Co.	11⅞	11½	11½
Crown-Zellerbach Co., pf.	83	83	83
Flintkote Co.	12½	12¼	12⅜
Robert Gair	1½	1¼	1½
Robert Gair, pf.	8⅜	7¾	8¼
International Paper & Power	14⅛	12⅞	13
International Paper & Power, pf.	65½	62½	62¾
Johns-Manville Corp.	58½	57½	58
Johns-Manville Corp., pf.	....	....	....
Kimberly Clark Corp.	28	27	28
MacAndrews & Forbes	25½	25½	25½
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	20¼	20	20¼
Mead Corp.	7⅝	7⅝	7⅝
Mead Corp., pf.	....	....	....
Paraffine Companies, Inc.	27½	27½	27½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	11¾	11½	11½
Rayonier, Inc., pf.	23¾	23¾	23¾
Ruberoid Co.	15½	14⅞	14⅞
Scott Paper Co.	38¼	37	37
Scott Paper Co., pf.	113¼	112	113¼
Sutherland Paper Co.	20	19½	20
Union Bag & Paper Corp.	10⅝	10⅛	10⅜
United Paperboard Co.	2⅝	2⅝	2⅝
U. S. Gypsum Co.	58	56	56
U. S. Gypsum Co., pf.	171	171	171

New York Curb Exchange

High, Low and Last for Week Ending April 30, 1941

	High	Low	Last
American Box Board Co.	4	4	4
Brown Co., pf.	....	....	....
Great Northern Paper	39	39	39
Hummel-Ross Fibre Corp.	5½	5⅜	5⅜
National Container Corp.	11¼	11⅛	11¼
St. Regis Paper Co.	1⅞	1¾	1⅞
St. Regis Paper Co., pf.	82¼	82¼	82¼
Taggart Corp.	....	....	....

Great Lakes Makes Good Report

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 28, 1941—At its annual meeting this week Great Lakes Paper Company, Ltd., re-elected its directors, including Hon. W. Earl Rowe, who was subsequently re-elected president and also made managing director.

The annual report reveals a net profit of $318,275 in the year ending December 31, 1940, which is equivalent to $1.59 per share on the combined 200,000 "A" and "B" cumulative participating preference shares and compares with $236,936, or $1.18 a share in 1939.

Both class "A" and "B" preferred issues are entitled to dividends of $2 per share per year and were in arrears to the amount of $8.25 a share as of Jan. 1, 1941.

Balance sheet as of Dec. 31, 1940, shows current assets of $3,349,246, and current liabilities of $801,114, leaving net working capital of $2,548,132. This compares with working capital of $2,013,863 at the end of the previous year. Cash was $735,331 as against $459,734.

Operating profit in 1940 of $1,804,557 includes premium on foreign exchange and compares with $1,053,941 in 1939.

In his presidential address Mr. Rowe said that present indications are that the volume of newsprint sales for the present year will be at least equal to those of last year. While manufacturing costs per ton will increase, due to increased costs of materials and supplies, and higher transportation rates will prevail, the demand for unbleached sulphite has increased materially and it is anticipated that the company will be able to sell its full available production this year in a profitable market. Mr. Rowe also referred to the recently signed agreement between the leading paper mills and their employes, which he intimated was quite satisfactory and said that as far as could be foreseen at present, the company should enjoy as profitable a year in 1941 as it did in 1940.

The president also pointed out the part the pulp and paper industry had played in Canada's struggle for foreign exchange and how Great Lakes Paper Company had contributed in no small measure to this effort, as it exports over 99.8 per cent of its entire output to the United States.

"The company has, in conjunction with other Canadian newsprint companies, petitioned the board of referees for relief under the special provisions of the Excess Profits Tax Act of companies whose business was depressed during the standard period," Mr. Rowe concluded.

Great Lakes Paper Company, Ltd., has received 35,613 shares of common stock in the newly re-organized Minnesota and Ontario Paper Company in settlement of its old claim against the estate. The stock for the time being has been set up at nominal value on the books.

The board has authorized capital expenditures of approximately $150,000 for improvements at the mill and an expenditure of probably $75,000 will be necessary for construction of a dam and other improvements required for opening up and operation of the Black Sturgeon Timber limit.

Gair Earns $175,322

Robert Gair Company, Inc. and United States subsidiaries report for the quarter ended March 31, 1941, profit, after depreciation, interest and dividends of subsidiary company, and reserve for federal income taxes but before interest on income notes, of $175,322.29.

Gair Company Canada, Ltd., wholly owned subsidiary of Robert Gair Company, Inc., reports for the quarter ended March 31, 1941, profit, after provision of $51,000 for Dominion and Provincial income taxes, of $46,138.54 in Canadian dollars.

Due to the discount on exchange of Canadian dollars into United States currency, issue of a consolidated statement of earnings is impractical.

Abitibi Profits Up

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 28, 1941—Earnings of Abitibi Power and Paper Company, Ltd., for March, 1941, prior to audit, charges for depreciation, bond interest of $291,613.13 (includes interest on overdue and unpaid interest) and income and excess profits taxes, amounted to $687,528. This compares with

Foxboro Finds The Way

TO BETTER QUALITY AND COSTS!

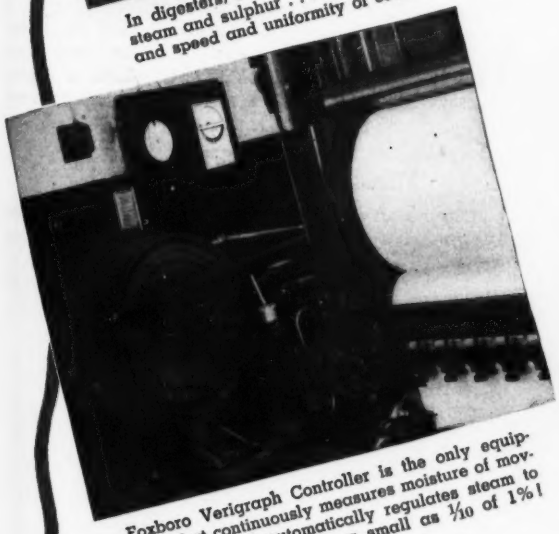
When you are considering installation of additional instruments, don't make your final decision until you have investigated Foxboro's original instrument systems for many important paper-making operations.

Foxboro Instrumentation for pulp and paper mills is engineered by men who learned paper-making from practical mill experience. They know methods and desired results . . . develop instrumentation specifically to make processes operate more smoothly and more productively. Foxboro Instrumentation is creative instrumentation that *finds the better way!*

Illustrated are just four of many original Foxboro Systems now improving pulp and paper production. Write for detailed information on Foxboro Instrumentation for these or other processes. **The Foxboro Company, 114 Neponset Ave., Foxboro, Mass., U. S. A.** Branches in principal cities of United States and Canada.

Better stock is produced at lower cost through use of Foxboro Automatic Temperature Control on pulp grinders. Stone-life is greatly increased.

In digesters, Foxboro Control enables savings in steam and sulphur . . . increases long-fiber count, and speed and uniformity of cook.

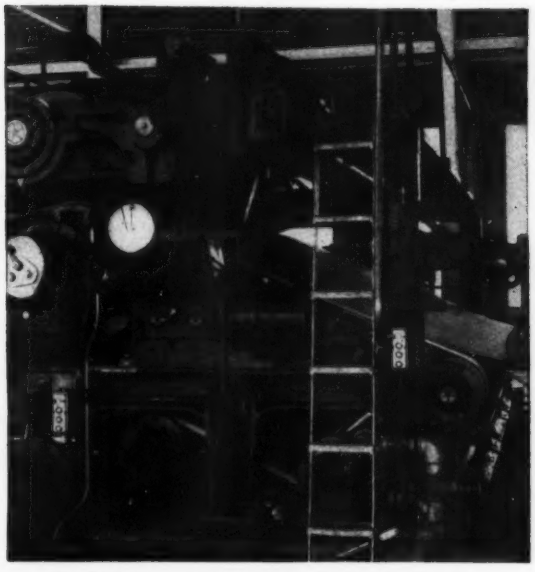


Foxboro Verigraph Controller is the only equipment that continuously measures moisture of moving paper and automatically regulates steam to dryers. Feels changes as small as 1/10 of 1%!

FOXBORO

REG. U. S. PAT. OFF.

Creative Instrumentation



Foxboro Pneumatic Loading for press rolls and other roll-equipment maintains exact, calibrated pressure on each end of roll independently.

$383,151 in March, 1940, and $517,915 in February, 1941.

Included in the March, 1941, figure is $123,396 received as premium on United States exchange.

Shipments of newsprint in March amounted to 38,196 tons, compared with 26,964 tons in March, 1940, and 28,421 tons in February, 1941. Shipments of sulphite pulps amounted to 6,537 tons in March, compared with 6,001 tons in March, 1940, and 6,401 tons in February, 1941.

U. S. Gypsum Nets $1.01

The report of the United States Gypsum Company and its subsidiaries for the quarter ended on March 31 shows a net income of $1,341,773 after depletion, depreciation and Federal income taxes based on the present law and the anticipated increase in rates during 1941. This is equal, after preferred dividends, to $1.01 a share on the common stock outstanding. It compares with a net income of $1,062,921, or 77 cents a share, in the corresponding quarter of last year.

For the twelve months ended on March 31 net income was $7,331,826, equal to $5.67 a share on the common stock, compared with $7,438,071, or $5.77 a share, in the corresponding twelve months of last year.

Sutherland Profits Off

The Sutherland Paper Company reports for the March quarter a net profit of $148,463 equal to 51 cents a common share, versus $201,140, or 70 cents a share in the March quarter of 1940.

For the 12 months ended March 31, net profit was $761,249, equal to $2.65 a share, versus $808,678, or $2.82 a share for 12 months ended March 31, 1940.

Johns-Manville Nets $1.73

The Johns-Manville Corporation and Canadian and domestic subsidiaries for the quarter ended March 31, 1941, reports a profit of $1,561,588 after taxes and charges, equal after preferred dividends to $1.73 a share on 850,000 shares of common stock, compared with $777,694 or 76 cents a share in the March quarter a year ago.

A. W. P. Earns $27,358

The American Writing Paper Corporation for the March quarter reports a net profit of $27,358, after a provision of $27,358 against Federal income taxes and the setting aside of $30,354 for possible pulp-cost fluctuations, against $9,879 correspondingly last year.

Valve Bag Nets $1.78

The Valve Bag Company for 1940 reports a net income of $122,091, equal after preferred dividends to $1.78 each on 41,000 common shares, against 1939 net of $139,250, or $2.11 a common share.

Whitaker Votes Dividends

The Whitaker Paper Company has declared the quarterly dividends of $1 on common stock and $1.75 on preferred, both payable July 1 to shareholders on record June 14.

Canadian I. P. Nets $1,270,344

The Canadian International Paper Company and subsidiary companies report for 1940 a new profit after provision for doubtful accounts, interest, amortization of debt, discount and expense, depletion and other charges of $1,270,344.53. The statement of profit and loss and deficit follows:—

Statement of Consolidated Profit and Loss and Deficit
FOR YEAR ENDED DECEMBER 31, 1940

SALES AND OTHER INCOME:		
Gross sales, less returns, allowances and discounts	$52,854,256.63	
Other income—net (see summary)	1,365,953.25	$54,220,209.88
COST AND EXPENSES:		
Cost of sales		
Pulpwood, labor, materials, etc.	$27,378,868.96	
Maintenance and repairs (set note 4)	2,924,296.68	
Taxes (other than income and excess profits taxes)	521,129.79	
Outward freight and delivery expenses	9,991,063.66	
Selling, general and administrative expenses	1,722,202.66	42,537,561.75
		$11,682,648.13
DEDUCTIONS:		
Interest on obligations of subsidiary companies	$ 751,099.49	
Interest of Canadian International Paper Company		
On first mortgage bonds and prior liens	1,204,613.18	
On other obligations	1,886,166.52	
Amortization of debt discount and expense	315.733.40	
Depreciation (see note 5)	5,099,326.94	
Depletion (see note 6)	551,893.75	
Provision for income and excess profits taxes	603,470.32	10,412,303.60
NET PROFIT FOR THE YEAR		$ 1,270,344.53
LOSS ON BONDS AND DEBENTURES REDEEMED DURING 1940		*31,919.04*
		$ 1,238,425.49
DEFICIT—JANUARY 1, 1940		*15,599,220.70*
DEDUCTION FROM DEFICIT:		
To restore to surplus (deficit) the amount charged thereto at December 31, 1939, with respect to conversion of net working capital of foreign subsidiary companies		84,356.19
DEFICIT—DECEMBER 31, 1940		*$14,276,439.02*

Sutherland Earnings Off

The Sutherland Paper Company for the March quarter reports a net profit of $148,463, or 51 cents a share on 287,000 common shares, against $201,140, or 70 cents a share last year. Twelve months to March 31: Net profit, $761,249, or $2.65 a share, against $808,678, or $2.82 a share for the preceding year.

Hinde & Dauch Net Up

The Hinde & Dauch Paper Company and subsidiaries for the March quarter reports on unaudited net profit of $265,747, equal, after preferred dividends, to 61 cents each on 360,250 common shares, against $208,223, or 45 cents a common share, last year; gross sales, $4,142,240, compared with $3,451,174.

Schumacher Corp. Votes Dividend

Directors of the Schumacher Wall Board Corporation have declared a dividend of $1.50 per share on preferred stock payable May 15 to stock of record May 5. This payment will bring the arrearage on this stock to $6.50 per share.

Flambeau Profits Rise

The Flambeau Paper Company for 1940 reports a net income of $164,533, against $112,059 in 1939.

CONSTRUCTION NEWS

Cloquet, Minn.—Northwest Paper Company, manufacturer of bond and other writing paper stocks, kraft papers, etc., has approved plans for new additions to mill, to be used primarily for expansion in soda pulp mill, reported to cost over $100,000, with equipment. Bids have been asked on structural steel framing and award is scheduled to be made at early date.

Kaukauna, Wis.—The Thilmany Pulp and Paper Company, manufacturer of tissue, grease-proof and other processed paper stocks, has completed plans for new addition to mill, to be one-story, used for extensions in production department. No estimate of cost has been announced. General erection contract has been let to the Permanent Construction Company, 2712 North Holton street, Milwaukee, Wis., and work will be placed under way soon.

Cincinnati, Ohio—The Paper Service Company, Station Avenue and line of Big Four Railroad, Arlington Heights, manufacturer of paper bags and other containers, has approved plans and is awarding contracts for new plant on Carthage avenue, in vicinity of present mill. It will be two-story, 60 x 100 feet, with office structure adjoining, and will be used for considerable increase in present capacity. Cost estimated over $75,000, including equipment. General erection contract has been let to the M. J. Roche Construction Company, Shaw avenue and Wasson road, and work will begin at early date; an award for iron work has been placed with J. B. Rowekamp Sons, Inc., 2620 Colerain avenue, Cincinnati.

Camas, Wash.—The Crown-Willamette Paper Company, manufacturer of kraft and other wrapping paper stocks, book and tissue papers, etc., has awarded general contract to Reimers & Jolivette, Inc., Railway Exchange Building, Portland, Ore., for new addition to mill, previously referred to in these columns. It will be four-story, 110 x 120 feet, designed for expansion in paper-converting department, including part of space for storage and distributing service. Cost is reported over $150,000, including equipment. Erection is scheduled to be placed under way at once. Company also has placed contract with L. H. Hoffman, 715 S. W. Columbia street, Portland, for extensions and improvements in sewage system for waste at mill, and work will be carried out at same time. Company is a subsidiary of the Crown-Zellerbach Corporation, Pittock Block, Portland, and 343 Sansome street, San Francisco, Calif.

Little Ferry, N. J.—New one-story addition to plant of Flintkote Company, manufacturer of roofing papers, building and other paper stocks, at Little Ferry, recently referred to in these columns, will be used primarily for extensions in administration and office facilities, instead of production division, as previously noted. Structure will be one-story and basement, totaling about 28,000 square feet of floor space, and will cost close to $60,000.

Brooklyn, N. Y.—The Willow Paper Box, Inc., recently organized with capital of $20,000, plans operation of local plant for the manufacture of a line of paper boxes and cartons. New company is represented by Silverman & Siegel, 1450 Broadway, New York, attorneys.

Detroit, Mich.—Welt & Sons Paper Company, 426 West Larned street, commercial paper products, has awarded general contract to E. F. Eiserman & Sons, Farwell Building, for alterations and improvements in building at 1414 Fourteenth street, to be used for storage and distributing service. H. H. Esselstyn, Majestic Building, is architect and engineer. No estimate of cost announced. Work will be placed under way at once.

Neenah, Wis.—The Sawyer Paper Company, Smith street, commercial paper products, has approved plans for one-story building, 34 x 46 feet, to be used for storage and distribution. Cost estimated about $15,000, with equipment. General erection contract has been awarded to the W. J. Durham Lumber Company, 510 North Commercial street, Neenah, and work will begin soon.

Los Angeles, Calif.—The California Container Corporation, 711 East Gage avenue, Vernon, Los Angeles, manufacturer of corrugated paper boxes and containers, has awarded contract to the Austin Company, 777 East Washington boulevard, engineer and contractor, for design and construction of new one-story building, 279 x 313 feet, at Boyle avenue and Fiftieth street, to be used primarily for storage and distribution. It is reported to cost over $100,000, including equipment. It is proposed to carry out work during summer.

Gatineau, Quebec—Canadian International Paper Company, Sun Life Building, Montreal, manufacturer of newsprint, plans rebuilding of one-story storage and distributing structure at mills at Gatineau, recently destroyed by fire with loss reported close to $50,000, including equipment.

New Companies

New York, N. Y.—The Carrier Container Corporation has been organized with capital of $10,000, to manufacture paper boxes and containers. New company is represented by Hyman I. Fischbach, 70 Pine street, New York, attorney.

New York, N. Y.—The Hudson-Miller Paper Corporation has been chartered with capital of 200 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Newman & Bisco, 29 Broadway, New York, attorney.

New York, N. Y.—The Universal Packaging Paper Corporation has been formed with capital of 200 shares of stock, no par value, to deal in paper products. New company is represented by Frederick Silver, 110 East Forty-second street, attorney.

V. C. Shaffer to be Retail Manager

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 28, 1941—V. C. Shaffer, for nine years with the Scott Paper Company, formerly representative in New Haven, Conn., has become retail manager of the Boston district.

NEKOOSA-EDWARDS CO. INCREASES WAGES

(Continued from page 9)

huge generating systems for emergency use. The connection will be established near the Bayside generating plant at Green Bay, at a total cost of about $233,000.

The interconnecting unit will have an initial capacity of 15,000 kilovolt amperes, and will connect the 132,000-volt system of the Wisconsin Michigan company with the 66,000-volt system of the Public Service company. Work is to be begun as soon as equipment and materials can be purchased. The two systems serve the paper mills of the Fox River Valley.

Opposes Broad Logging Regulations

Legislation setting up a Wisconsin agency with broad powers to regulate logging was opposed at a recent hearing at Madison, Wis., by E. B. Hurst, representing the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. The bill sets up a five-man "committee on forest practices" with a 30,000 annual appropriation under the state conservation commission. Its duties would be to set up cutting and selective logging standards for all timberlands except farm woodlots. Large commercial users would have to make "forest management plans" with the aid of the committee. Objections were raised because only the largest operators can afford selective cutting, and the committee would have "limitless power."

At the request of the Wisconsin Industrial Commission, a bill has been introduced in the Legislature liberalizing the state's unemployment compensation law. It would be changed to pay weekly benefits under a schedule instead of the flat basis of one-half the weekly wage. The new table would increase the benefits paid so that those earning less than $25 per week would receive more than the equivalent of half of their wages, in the lowest bracket much more. The maximum benefit would be $17 per week instead of $15.

Babcock Estate Pays Large Tax

A federal estate tax totalling $888,949.46 has been paid on the estate of Charles A. Babcock of Neenah, Wis., late president of the Wisconsin River Pulp and Paper Company. An estimate payment of $226,925.07 has also been made covering the normal state inheritance tax, plus payment of $68,076.93 for the estate emergency tax. The estate has been inventoried at $3,783,645.

Albert A. Wettengel Honored

Albert A. Wettengel, president of the Schlafer Supply Company, Appleton, Wis., was honored at a testimonial meeting by officers and employees of the company on Wednesday of last week, marking the completion of fifty years of service with the company. Mr. Wettengel is considered an authority on paper mill supplies, in which the company has dealt largely for many years. He was presented with a gold watch and a book containing 151 letters of congratulation.

"NON-USERS ARE THE LOSERS"

50TH ANNIVERSARY

TENAX FELTS

50 YEARS OF SERVICE

Papermaking history was written in 1891 when we introduced TENAX FELTS. Throughout the succeeding fifty years constant research and experimental tests have kept them in the forefront as Leaders in producing perfect papers at low costs per ton.

Let TENAX FELTS point the way to greater 1941 profits in your Mill.

"Non-Users Are The Losers"

1891 - LOCKPORT FELT COMPANY - 1941

NEWFANE, N. Y. — U. S. A.

N.P.T.A. Holds Regional Meeting

A Regional Meeting of The National Paper Trade Association was held on April 16, 1941, at the Stevens Hotel, Chicago. Many distributors from surrounding states were present and the main topic of discussion concerned the present and future position of the paper distributor under existing conditions. Reports were given by various selected delegates concerning consumption and delivery of paper in their various marketing areas and considerable time was given to the most efficient method of operation for paper distributors under the present circumstances.

A report on the activities of the National Association was given by C. E. Roach, vice-president of the Wrapping Paper Division of the Association, and the new Chairman of the Certification Board, G. E. Carpenter, Carpenter Paper Company, Omaha, Nebraska, urged all members to support the National Association in this program and outlined the many benefits to be derived from participation.

The following distributors were in attendance: C. E. Roach, Capital City Paper Company, Springfield, Ill.; I. E. Quimby, Quimby-Kain Paper Company, Grand Rapids, Mich.; J. L. Richey (secretary), Middle States Wrapping Paper Association; Ed. Wesselmann, The Diem & Wing Paper Company, Cincinnati, Ohio; W. P. Peterson, Peterson Paper Company, Davenport, Iowa; H. J. Voelker, W. H. Kranz Co., Racine, Wis.; A. G. Pringle, The Paper Supply Company, Minneapolis, Minn.; F. W. McCarty, Standard Paper and Woodenware Company, Kansas City, Mo.; G. E. Carpenter, Carpenter Paper Company, Omaha, Nebraska; V. J. Schlachter, Buckeye Paper Company, Toledo, Ohio; J. S. Addison, Service Paper Company, Racine, Wis.; J. M. Willem, A. E. Sielaff Paper Company, Milwaukee, Wis.; L. J. Marshall, Marshall Paper Company, Appleton, Wis.; W. P. Crowley, General Paper and Supply Company, Madison, Wis.; E. A. Sullivan, Rockford Wholesale Paper Company, Rockford, Ill.; A. J. Funk, Elgin Paper Company, Elgin, Ill.; F. A. Weber, J. C. Streibich Co., Peoria, Ill.; H. R. Gezon, C. W. Mills Paper Company, Grand Rapids, Mich.; R. R. Epler, Baker Paper Company, Cedar Rapids, Iowa; Harry Newton, American Paper Company, Milwaukee, Wis.; Robert Seybold, The Seybold Paper Company, Cincinnati, Ohio; Ira Rohrer, John Wilding Paper Company, Fort Wayne, Ind., and Robt. H. Ziegler, assistant secretary, N. P. T. A.

Buy Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 30, 1941—Public Contracts Board, Department of Labor, has reported that for the week ended April 12 government departments purchased $125,600.40 worth of paper and allied products under the Walsh-Healey Act as follows: Barton, Duer & Koch Paper Company, $10,257.12 for bond paper for the Post Office Department; $21,725.00 worth of toilet paper for the Bureau of Supplies and Accounts, Navy Department; R. P. Andrews Paper Company, $14,418.21 worth of wrapping paper for the Post Office Department; Bogart Paper Company, $20,608.22 worth of paper for the Post Office Department; and William C. Ballantyne, $58,591.85 worth of paper tags for the Bureau of Supplies and Accounts, Navy Department.

KALAMAZOO

TILE CHEST

Adapted for Use with Agi-flo Pump

The Shartle Agi-flo agitates and delivers the stock. The Kalamazoo Glazed Tile Chest gives you the advantages of low cost storage and the utmost in cleanliness.

More than 700 installations of Kalamazoo Glazed Tile Tanks now in use prove their unvarying dependability. For maximum efficiency plan to use a Kalamazoo Chest with your next Agi-flo, or any other type of agitator.

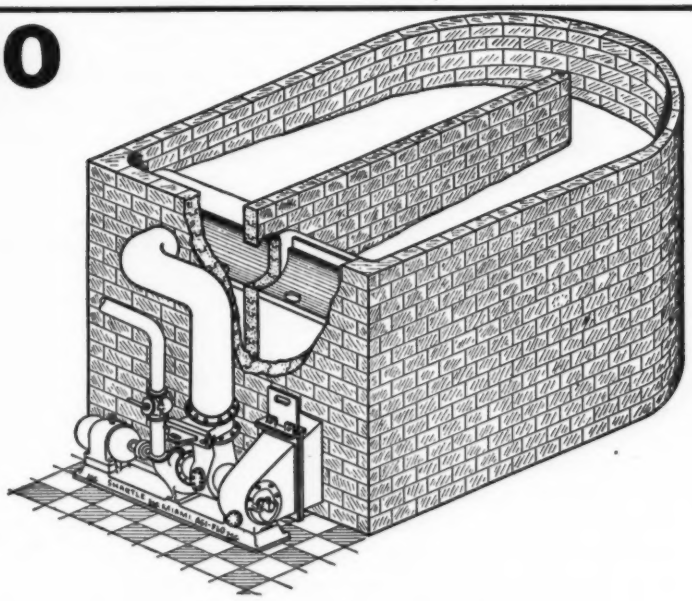


Illustration courtesy of Shartle Brothers Machine Company, manufacturers of the Shartle Agi-flo Pump.

GLAZED TILE

KALAMAZOO TANK & SILO CO.

KALAMAZOO, MICHIGAN

WOOD

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 112 May 1, 1941 No. 18

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

American Pulp and Paper Mill Superintendents Association, Twenty-second Annual Convention, Poland Spring House, Poland Spring, Me., June 17-19.

Technical Association of the Pulp and Paper Industry, Fall Meeting, Ann Arbor, Mich., September 16-19.

HIGHER TAXES

It is always difficult to formulate a taxation plan that will raise the desired revenue and equalize so far as practicable payments over all income groups. The taxation problem which the twenty-five members of the Ways and Means Committee of the House of Representatives is now studying is a most difficult one. In the first place, taxpayers must be heavily taxed for self-defense projects which, although considered essential, can scarcely be comparable in economic value with the more productive expenditures of peace-time years. It is also plain, that the huge revenue required to finance the complete program for national security, will form a heavy burden and will alter to some considerable extent the more normal economic status of the country that a new and different national economy must eventually emerge.

The prospect for the future appears to indicate a substantial change but it does not appear so gloomy as some commentators seem to view it. But, as President Roosevelt recently said, the situation is serious, and sacrifices must be made. Heavy taxation is one of the sacrifices. The problem before the Ways and Means Committee is the tough assignment of drafting a tax measure that will yield about $12,667,000,000 in revenue during the next fiscal year, beginning July 1. This amount is about two-thirds of an estimated $19,000,000,000 that will probably be spent during the next fiscal year, from July 1, 1941 to July 1, 1942. The taxation plan now favored is the reverse of that adopted in the last world conflict. Then, one-third of the cost was financed by taxes while two-thirds, not including loans to allied nations, was obtained by borrowing. The present plans of the Administration would check inflation and rising living costs by restricting consumer buying power through the payment of higher taxes and by the purchase of government bonds by individuals.

The Administration's concern regarding inflation is understandable enough, for it is this inflational force that is now providing much support for stock and commodity prices. It is believed by many authorities that the Government may be successful in preventing any considerable degree of inflation. Opinion of the day reflects, however, anxiety, that the Government may attempt to raise more in taxes this year than the prosperity of the country can bear. This is indicated in the feeling of many persons of moderate means that funds may be more advantageously placed in real estate, commodities or in securities than in bank funds, possibly subject to conversion into low-interest bearing self-defense bond issues. In other words, there appears to be many persons who prefer to pay taxes on income or capital appreciation rather than to pay out their capital. The suggestion of the Treasury that the Government issue defense bonds at higher rate of income than other low denomination obligations or baby bonds, would seem to fit this eventuality.

In commenting on the fact that the approach to higher taxation is hard on middle incomes, Godfrey N. Nelson, in an article in *The New York Times* of April 27, states in part: "It is said that the general objective of Treasury officials was to raise one-third of the additional revenue from the surtax on individuals, one-third from corporate taxes, and one-third from excise taxes . . . In presenting the Treasury's schedule of proposed individual surtax rates, Mr. Sullivan (Assistant Secretary of the Treasury), suggested that particular attention should be paid, 'not to the percentage of increase but to the amount of the tax and the effective rate of tax burden.' While on surtax net income of $50,000 and over the proposed increases in the rates are only 5% or less, and on incomes of over $750,000, the same rate, the rates in the lowest bracket (the first $2,000 of surtax net income over the exemption) is 11% and next lowest, 14%, as against no surtax under present law. On the next bracket of $2,000 the increase in the rate is 12% and in each of the next four brackets of $2,000 each (up to $14,000 of surtax net income) the increase is 13%. From that point the percentages of increase diminish gradually, except for remaining the same in some consecutive brackets."

In commenting on the probable result of this taxation plan, Mr. Godfrey goes on to say that, "Thus, while the minimum income subject to the surtax is lowered from $4,000 to $2,000, in the case of a married person, and to $800 in that of a single person, the increased amounts of surtax payable in the lower brackets and by middle-income taxpayers, taken in one hurdle, are capable of raising havoc with the taxpayers' present mode of living. The close adherence

to present surtax rates as applied to large incomes should not be objectionable. Extremely high tax rates passed the point of diminishing returns years ago. Put, even admitting that present rates on small incomes are low, it would seem unwise to increase these rates so severely and abruptly as to prevent the taxpayer from making needful adjustments in his affairs without going into debt. Debts incurred during the period of transition would unquestionably work hardship on many taxpayers whose living expenses are 'geared' according to present tax and other obligations."

In commenting on corporation taxes, Mr. Nelson pointed out that, "Additional revenue from proposed taxes on corporations also omits the normal tax from consideration . . . Admittedly, the purpose of imposing the proposed 6% tax as a 'surtax' on corporations is to make the tax applicable to interest on government obligations exempt from the normal tax. This is an example of imposing a surtax merely by calling it by that name. In fact, the tax would be levied on the normal net income. By designating it a surtax and thus assessing it separately from the normal tax, the tax becomes applicable to certain income exempt from the normal tax or only partly from the surtax."

In conclusion Mr. Nelson states in part that, "While corporate profits attributable to the defense program may not suffer from an increased excess profits tax levy, it would seem advisable that if such increases are to be made generally applicable to all corporations, more equitable and broader relief provisions should be adopted. The proposal to place an excise tax on insurance should exempt life insurance. In England life insurance premiums, instead of being taxed, have been deductible from gross income for income tax purposes. In times of stress, like the present, the protection of the family should be encouraged, not discouraged by taxation. Such a tax would appear to be contrary to our national security policy."

Estate of Byron B. Taggart

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., April 28, 1941—The estate of the late Byron B. Taggart, chairman of the board of Taggart Brothers, Inc., is estimated at about $1,000,000, according to his will which was probated this week. The widow, Mrs. Josephine Taggart, is bequeathed $25,000 outright while trust funds are established for her and three daughters. The employees received a total of $7,000 while bequests are made to the House of the Good Samaritan, Children's Home, Mercy Hospital and the Salvation Army. The Children's Home is to receive an additional $10,000 following the death of the widow. Sisters, nieces and cousins are provided for through trust funds as are two grandsons. The will also provides that Hamilton College Chapter of Psi U fraternity receive the mortgage bonds held by the estate on the chapter house.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
March 15	91.7	March 16	82.4
March 22	91.8	March 23	82.8
March 29	94.0	March 30	82.3
April 5	92.9	April 6	79.4
April 12	94.9	April 13	81.8
April 19 (Prelim.)	*94.5*	April 20	86.5

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.1	89.4	*92.1*	...	...	...	...

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	...	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date	68.0	77.1	89.6	67.4	80.0	85.1	*89.7*
Year Average	70.0	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	*82*	..	..	..	..	..	..	..	..	..	..

Week ending Mar. 15, 1941—82
Week ending Mar. 22, 1941—82
Week ending Mar. 29, 1941—84
Week ending Apr. 5, 1941—83
Week ending Apr. 12, 1941—85
Week ending Apr. 19, 1941—*78*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Kieffer Paper Mills Raise Wages

EWING, Ind., April 28, 1941—The Kieffer Paper Mills, manufacturers of Shoksorb cushioning papers and Showsorb paper products, has posted a notice of a general increase in wages to all male employes of 12½, 10 and 7½% based on the different hourly wages paid. This increase is effective May 1st.

The company has in recent years paid a bonus at the end of the year, based on the net earnings of the company. This bonus in 1940 was equal to approximately two weeks pay.

The company also carries and pays the full premium on life insurance of $1,000 to $1,500 for each employee who has been in their employ for one year or more.

The company has now the largest number of employes in its history of thirty-five years of continuous operation under the same management and is now so behind with orders that a great deal of overtime is being paid. The products are being shipped to all parts of the United States and Canada and the demand for the company's products is such that new equipment is being installed.

Appoint Agent for Kalamazoo Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 20, 1941—The National Labor Relations Board certified Local 52, International Brotherhood of Paper Makers, A. F. of L., as sole bargaining agent of the hourly rate production and maintenance employees of Kalamazoo Paper Company, Kalamazoo, Mich.

In a secret ballot election March 27, employees cast 564 votes for and 100 votes against the brotherhood, the NLRB said.

"Don't you dare come any closer!"

. . . SCREAMED THE BUBBLE DANCER ON PAGE 13 TO THE PORCUPINE ON PAGE 14

"I'm terribly sorry, ma'am," said the porcupine, blushing to the roots of his needles. "But don't worry about your balloon . . . I'm only ***show-through*** from the next page!"

"You—you ***pincushion!***" exploded the dancer. "You're ruining my act!"

"And you're ruining my ***reputation!***" sighed the porcupine. "You'd better tell the paper manufacturer about this . . . before my wife hears about it!"

"The very idea . . . !" spluttered the dancer.

". . . is Krebs!" broke in the porcupine. "And it's a good idea, too . . . because Krebs Pigments make even the thinnest paper opaque!"

"Wait a minute," said the dancer. "Did you say *opaque*?"

"Certainly," the porcupine said. "With Krebs Pigments you get paper so clean . . . so white . . . so ***opaque*** that printing stands out sharply on both sides of the page! Besides, if you have a technical problem, Krebs is always ready to help you with it!"

"That's all I want to know," said the dancer, starting off the stage. "I'm gonna get some of those Krebs Pigments for my balloon . . ."

"Just a minute, ma'am," said the porcupine, finding a comfortable spot. "We'll send 'em a letter at once!"

KREBS PIGMENT & COLOR CORP.

1007 Orange Street...Wilmington, Delaware

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Water Treatment at Escanaba Paper Mill*

By I. W. Johnston[1]

Abstract

The Escanaba River flow fluctuates greatly, causing a wide change in the organic matter present. The water problem consisted of organic coloring removal and hydrogen ion concentration (pH) correction. A description of the means to accomplish this and the results are discussed.

The Escanaba Paper Company, Escanaba, Michigan, was confronted with the problem of clarifying and adjusting the pH of their process water. Raw water contained organic coloring matter ranging from 30 to 200 p.p.m., pH ranged from 7.0 to 8.0 and requirements varied from 200 to 2100 gallons per minute. Today, with a modern water purification plant, the mill is being supplied with an ideal processing water-color, 5 to 20 p.p.m. and pH 6.8 to 7.1.

The mill is located on the Escanaba River and is about 5 miles from the city of Escanaba. The Escanaba River basin drains a considerable portion of the upper peninsula which has a large amount of swamp area. The water level or flow of this river fluctuates greatly and the amount of organic matter in the water varies to a great extent. As this company's water problem was that of organic coloring removal and pH correction, this paper will be confined to these two subjects. The capacity of the water plant is 3 million gallons per day.

Raw Water Conditions

The variations in the amounts of organic coloring matter that is carried by the river water are given in Table I.

TABLE I.—COLOR AND TURBIDITY OF RAW WATER

	Color, parts per million		
	Maximum	Minimum	Average
Spring and fall	200	65	110
Summer and winter	150	30	75

The turbidity of the water is quite low, having a high of about 20 p.p.m. in the spring of the year. The temperature of the water varies from about 32.5 in winter to about 80 deg. F. in summer; and the alkalinity from about 30 to 90 p.p.m. The pH changes from a low reading of 6.3 to a high of 7.8. The color of the water changes almost daily, this being due to the swamp drainage caused by any degree of rainfall. The coloring matter is mostly decayed vegetable matter, which is ideal for setting up septic action in the water under indirect contact.

The operators of this paper mill desired a process water supply having a color of not over 20 p.p.m. for some grades of papers and down to a color of 5 p.p.m. for other grades. The pH of the treated water had to be from 6.8 to 7.1 for certain mill operating conditions.

Treatment System

The water treatment plant is housed in a separate building 117 feet long by 70 feet wide, beside the paper mill. Part of the walls of the building are built on the top of flocculating and clarification basins. All the equipment is located on one operating floor, clearly in view, as shown in Fig. 1. The flowsheet (Fig. 2) shows the raw river water entering the flash mixer into which chemicals are added. The chemically-treated water then passes through the flocculator. The water after having been adequately flocculated, is fed into the clarifier. The overflow, or water containing only a small amount of flocs, flows into the automatic magnetite filter. The clear filtered water then enters the paper mill supply clear-well storage. The water flows by gravity throughout the entire plant except in one minor case, which is the removal by pumping of the settled and thickened solids from the clarifier. This flow is, however, quite small, being about 2 per cent of the total flow.

The water treatment plant (Fig. 2) contains the following units of equipment:

1 Hydraulic automatic flow controller
1 Duplex atuomatic dry chemical feeder
1 Flash mixer
1 Flocculator
1 Squarex clarifier
1 Barnes sludge pump with automatic timer
1 Automatic magnetite filter

FIG. 1

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Engineer, The Dorr Co., Inc., Chicago, Ill.

Control of Flow, Chemicals, and Mixing

The flow in gallons per minute to the water plant is constantly varying from about 200 gallons per minute to the plant capacity of 2100 gallons per minute. A hydraulic flow-regulating valve on the 16-inch raw water inlet pipe controls the amount of water fed to the flash mixer or the plant. This valve opens and closes in small increments, depending on whether the water level in the clear well storage is falling or rising, respectively. The valve will close and shut off the feed water completely if the clear well is full. The duplex automatic feeder adds the necessary predetermined chemical requirements for color removal and for the desired pH condition of the finished water, in direct proportion to the amount of flow. The volumetric chemical feeder's operation is controlled on the principle of differential pressure on opposite sides of an orifice plate in the 16-inch raw water inlet pipe.

One chemical, alum, is mixed intimately with the raw water in the flash mixer. This high-rate mixer gives an almost instantaneous reaction of the chemical with the raw water. The concrete mixer basin is 4 feet square by 3 feet 6 inches deep and has a theoretical detention time of approximately 12 seconds. The other chemical, lime, is added to the third division or compartment of the 3-section flocculator. Lime is added for one purpose only, to maintain the pH of the finished water at 6.8 to 7.1. It is not added with the alum in the flash mixer as the lime would set the color in the raw water.

Flocculation

The flocculator has 3 separate flocculating zones and consists of 3 rows of 9 feet 6 inches diameter by 17 feet long paddles with baffles between each paddle section or zone. The basin is 45 feet long by 17 feet wide by 11 feet side water depth, and has a detention time of approximately 30 minutes at maximum flow. The flocculating paddles are interconnected by means of chains and sprockets between paddles shafts and are driven from the center shaft

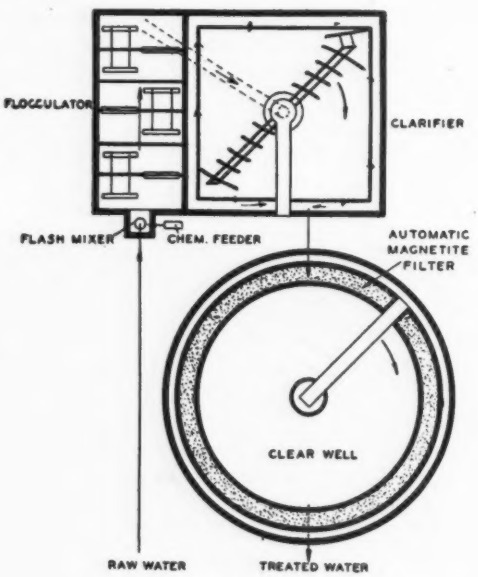


FIG. 2
Flowsheet of Escanaba Paper Company Water Treatment Plant

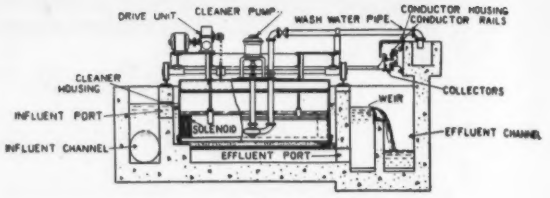


FIG. 3
Cross Section through Magnetite Filter Bed Separate Structure—Downflow

by a chain and sprocket from a 1½ hp. drive unit which is mounted on top of the basin. The alum-dosed raw water enters the first division of the flocculator and immediately comes into contact with rapidly circulating flocs which form nuclei for new floc formation. The section through a flocculator (Fig. 3) shows the high degree of recirculation which is effected.

The treated water flows successively through the first two compartments and into the third division, where the lime is added in sufficient quantity to give a pH of approximately neutral. By the time the flocs have reached the end of the flocculator, they are in the form of compact fast-settling masses, requiring less volume and settling area for their removal in the succeeding clarification step.

Clarification

The chemically-treated and flocculated water is introduced in the center influent well of the square clarifier, through an inverted siphon. The plan and elevation, (Fig. 2), shows both the flocculator and Squarex clarifier installed in connecting basins. The siphon pipe has a maximum flow velocity of 1.2 feet per second, which is below the critical velocity at which floc formations are destroyed.

The influent distributes the flocculated water over the entire area of the clarifier. The clarifier is 45 feet square by 11 feet side-water depth and has a detention time of only 80 minutes at maximum flow. This extremely short time was, before the advent of mechanical flocculation, unthinkable. The fast-settling flocs drop to the slightly sloping bottom of the clarification basin and are conveyed to the center discharge cone by means of the mechanism raking arms. The raking blades on the arms have brass squeezers attached which sweep the bottom of the tank—including the corners—clean, preventing any septic action of the organic solids. This continuous elimination of solids is extremely important in the spring and fall of the year, when the organic matter and algae in the raw water are quite high. The consolidated sludge is withdrawn from the discharge cone by means of a sludge pump, which is operated in connection with an automatic timer to control the volume of sludge removed. The clear water, carrying a small amount of flocs, is discharged into the overflow or effluent channel completely around the clarifier tank.

Filtration

The clarified water or effluent from the clarifier now flows into the adjoining automatic magnetite filter where the last traces of solids are removed. Fig. 1 shows the annular-shaped 6-foot wide bed automatic filter surrounding a 40-foot diameter 100,000-gallon capacity clear well storage and the cleaner carriage. The filtering medium is a 3-inch layer of

30 to 50 mesh magnetite sand, which is supported on a bronze screen and a grating completely around the bottom of the annular ring. In the conventional sand filter, the top 3 inches of sand only is effective from the standpoint of solids removal; the other 18 inches to 2 feet being required for head differential for backwashing.

The filter carriage rotates around a center support and on a steel rail on top of the outside wall of the filter bed. The cleaner carriage is definitely a mechanical sand washer. The filter medium, because of its magnetic properties, permits electrical cleaning. The cleaning is accomplished with a solenoid with a make and break switch which alternately picks up and drops the magnetite sand as it passes over the filter bed. The resulting agitation of the sand upwards and downwards, and the upward flow of water into the cleaner box, shakes and washes the solids free from the sand particles. This upward flow of filtered wash water, when the sand is lifted to the solenoid, carries the solids over a weir into the wash water pump compartment. From the pump box, the wash water is sent to waste or returned to the flash mixer. The upward flow of wash water is made possible by reducing the water level within the sealed cleaner compartment to a point below that in the effluent channel. The sand, of course, is returned to the filter bed. The wash water can be returned to the flash mixer, as then no treated water is lost from the filtering operation.

The cleaner remains idle until the filter bed becomes charged with solids and the water level over the bed rises to a predetermined height, at which time a float switch will close. This float switch actuates a magnetic contactor starting the motor generator which supplies the direct current power to the solenoid. The cleaner pump and drive start at the same time as the cleaning mechanism. The cleaner rotates over the bed and continues to operate until the water level again recedes to its predetermined level where the float switch opens, stopping the cleaner. The cleaner operates about one quarter to one half of the time or 6 to 12 hours per day. It should be pointed out at this time that no clear well storage is required for backwashing, and that only about 50 square feet of the total bed is out of service when the cleaner mechanism is operating; the remainder of the bed is constantly filtering water. The total loss of head is about 5 inches between the flash mixer and the effluent channel of the magnetite filter.

Control and Operating Attention

With a water that fluctuates very rapidly in color and chemical composition, it is necessary to have adequate control equipment to determine proper chemical dosing for a desired color of finished water. If a radical change has taken place, fast efficient flocculating tests are conducted in a laboratory model flocculator to determine the alum and lime dosage required.

The mill chemist or technician has set up a routine testing program in which he tests the raw and filtered water for the following factors: pH, color, turbidity, and alkalinity. These tests are conducted each morning and afternoon and require a total of about one hour per 24 hours.

The operating attention consists of the analyses and filling the chemical feed hoppers. The greasing of the mechanical equipment is done daily, to insure smooth operation. The complete operating attention, however, is limited to 2-man hours per 24 hours.

The maintenance on equipment at this plant has been low, since the starting date of September, 1939. The amount of sand added to the filter bed has been about 4 tons.

TABLE II.—OPERATING DATA AT DIFFERENT SEASONS

	Average Conditions			
Raw Water	Spring	Summer	Fall	Winter
Flow, M.g.d.	2.0	2.3	2.25	2.34
Temp., ° F.	40	72	42	32.5
Color, p.p.m.	130	100	75	46
Total alkalinity, p.p.m.	52	85	82	90
pH	7.2	7.8	7.4	7.5
Chemical Consumption				
Alum, gr. per gal.	5.5	5.0	4.0	2.4
Lime, gr. per gal.	1.75	1.1	1.0	0.15
Finished Water				
Color, p.p.m.	16.5	15.0	12.5	12.4
Reduction, %	87.3	85.0	83.3	73
Total alkalinity, p.p.m.	48	67	70	77
pH	7.0	6.9	7.0	6.9

The above results cover the period from September, 1939 to September, 1940. Operating conditions have changed and the finished water now enters the mill at a pH of about 6.4.

Empire State TAPPI to Meet in Canada

The Empire State Section of the Technical Association of the Pulp and Paper Industry will hold its Spring meeting at the General Brock Hotel, Niagara Falls, Ontario, Canada, May 15-16, 1941. This will be a joint meeting with the New York-Canadian Division of the Superintendents Association.

The convention committee consists of H. E. Karberg, chairman and P. F. J. Dolan, secretary; program—B. D. Millidge and E. G. Kirby; papers—H. D. Cook; reception—G. Rausch, S. Stapley, and A. S. Loman; mill visits—H. P. Bailey, T. Imbleau, E. G. Kirby, and H. Blenkenship; golf—W. J. Parks and P. F. J. Dolan, and transportation—F. M. H. Cushing and E. G. Kirby.

On Saturday evening at 7:00 p.m. a banquet will be held and will be followed by dancing.

Members and non-members who plan to attend should make their reservations with M. H. Bennett, 363 Eastern boulevard, Watertown, N. Y., or with H. E. Karberg, Alliance Paper Mills, Merritton, Ontario, immediately.

Mill visits will be a feature of the program. For the ladies, the committee has arranged an interesting program for the two days. Popular and semi-technical papers will be presented during the business session.

Pacific TAPPI to Meet in Portland

The Pacific Section of the Technical Association of the Pulp and Paper Industry will hold its Spring convention in Portland, Ore., June 6-7, 1941. This will be the usual joint meeting with the local division of the Superintendents Association. An intensive educational program has been planned by the convention committee. Register now if you plan to attend with E. G. Drew, 322 Railway Exchange Building, (telephone BEacon 1667) Portland, Ore.

Paper Mill Valuation Increased

Valuation of the Anglo-Canadian Pulp and Paper Mills plant in Quebec City has been raised $500,000 to $2,000,000 according to a late press dispatch. The increase was authorized by the Quebec Legislature.

Monel Jordan Bars*

By T. E. Lagerstrom[1], F. P. Huston[1], and W. F. Burchfield[2]

Abstract

This paper discusses recorded practical experience with jordan bars of Monel during the past 20 years. It contains data on comparative operating costs of Monel and various other jordan bar materials in a number of installations under different operating conditions. Data on the mechanical properties of the three grades of Monel jordan bars are included.

When the opportunity was provided to present a paper at this meeting, a review of possible subjects disclosed that the background of experience with Monel[3] jordan bars had been sufficiently extensive to warrant the presentation of a summary with particular reference to performance in terms of savings to users over many years.

Practical experience with Monel jordan bars in paper and paper board mills provides evidence of the usefulness of this nonrusting, corrosion-resistant and highly wear-resistant alloy.

Paper Mill Services

The oldest record[4] comes from a mill producing rag-content bond, ledger, and writing paper. This mill previously used steel bars in both plug and shell fillings, obtaining from 3 to 9 months of service, averaging 6 months' usage. As the steel blades suffered badly from erosive and corrosive action and were worn down unevenly, the space between plug and shell was not the same at all points so that the stock passing through was refined in varying degree. This tended to cause lack of uniformity in the finished paper. The wood rotted excessively in contact with steel and the wearing down of the bars necessitated chipping of the wood about once a month.

Bronze bars replaced the steel bars and were found fairly satisfactory, the average life of the bars being about three years. The chief difficulty with the bronze bars was their tendency to burr, thereby seriously affecting the refinement of the stock. The bronze fillings were therefore filed about twice a year. Chipping of the wood was required about twice yearly.

TABLE I.—COMPARATIVE COSTS OF JORDAN FILLINGS

Monel vs. steel and bronze fillings used at a Wisconsin paper mill producing rag-content writing, bond, ledger, onion skin and high grade mimeograph bond, and having used Monel jordan bars for a period of 20 years to date.

Material	Steel	Bronze	Monel
Per filling			
Knives—Plug	$184.00	$747.00	$747.00
Shell	112.00	628.45	628.45
Wood—Plug	36.00	36.00	36.00
Shell	29.50	29.50	29.50
Totals	361.50	1,440.95	1,440.95
Average life of blades	6 months	3 years	7 years
Annual Filling Costs on One Jordan			
Materials			
Steel—$361.50 ÷ ½ years	$723.00	.....	.....
Bronze—$1,440.95 ÷ 3 years	.....	$480.32	.....
Monel—$1,440.95 ÷ 7 years	.....	.....	$205.85
Replacement labor (70 man-hours @ $.65 = $45.50)			
Steel—$45.50 × 2	91.00	.....	.....
Bronze—$45.50 ÷ 3	.....	15.17	.....
Monel—$45.50 ÷ 7	.....	.....	6.50
Wood chipping (15 man-hours @ $0.65 = $9.75)			
Steel—$9.75 × 12 per year	117.00	.....	.....
Bronze—$9.75 × 2 per year	.....	19.50	.....
Monel—$9.75 × 2 ÷ 7 years	.....	.....	2.79
Removal of burrs Bronze only 12 man-hours @ $.65 × 2 per year	.....	15.60	.....
Totals	931.00	530.59	215.14
Scrap value			
Steel—none	.....	.....	.....
Bronze—700 lb. @ $.09 ÷ 3 years	.....	21.00	.....
Monel—700 lb. @ $.11 ÷ 7 years	.....	.....	11.00
Net filling costs/jordan/year	931.00	509.59	204.14
Savings effected by Monel fillings on 5 Majestic jordans			
Over steel—($931.00 — $204.14) × 5	.....	(78%)	$3,634.30
Over bronze—($509.59 — $204.14) × 5	.....	(59.9%)	$1,527.25

TABLE II.—RECORDS OF MONEL JORDAN FILLING IN PAPER MILLS IN 1940

Service of filling	Type of mill and stock refined	Jordan	Chipping and life of wood fillers	Remarks by Mills Submitting Records
Mill 1, 13 years	Paper Mill: producing bond, ledger, mimeograph writings, etc. Stock: Bleached Sulphite	Plug bars in no. 3 Appleton, installed 1927; replaced December, 1940.	Chipped woods once in 10 years, woods changed after 11 years of use with Monel bars.	"Filling is free from feather edges. . . . We changed the woods of the plug in 1938 after 11 years of service. This jordan filling gave us 13 years of life."
Mill 2, 9 years	Paper Mill: producing rag content bonds, ledgers, writings, mimeograph, etc. Stock: Rag and sulphite combined.	Plug bars in no. 2 Appleton, installed 1930; replaced 1939.	Chipped woods once in 8 years, never changed woods during 9 years' life of plug bars.	"We used Monel plug filling for a total of 9 years. . . . We use these for good combined brushing and cutting action. We have never had any trouble with feather edges on the Monel. During this time we used 2 sets of bronze shell fillings. Regarding the woods, these were never changed during the period the Monel was in service."
Mill 3, 10 years	Paper Mill: producing bag paper, bread wrapping, crepe, sulphite paper, tissue M. G. waxing, etc. Stock: Sulphate and sulphite.	Plug bars and shell bars in 2 Jordans, first filling installed in 1930 and second filling installed in 1937. Both are still in service December, 1940.	First Monel-filled jordan chipped only once since installed 8 years ago. Bronze fillings were chipped every 6 months. No change of woods in 10 years of Monel filling service.	"We have two jordans with Monel fillings in them, and they have given us satisfactory life. We find that the filling stands up better and gives a combined brushing and cutting action, and that we do not have to gum our jordans as often as we otherwise would and that we do not gum them as deep. Both jordans operate on the same kind of stock (sulphite and sulphate pulps) and in all of the jordans we try to get more of the hydrating effect rather than cutting, and to operate the jordans at the same speed which is about 385 to 400 r.p.m. The longest period of experience we have is 10 years and during that time, we have never had to put in wood fillers."

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Monel and Rolled Nickel Department, The International Nickel Company, Inc., New York, N. Y.

[2] Research and Development Division, The International Nickel Company, Inc., New York, N. Y.

[3] Registered at U. S. Patent Office.

[4] A. C. Nielsen Company—Survey IN-104-JZ —Date 4/19/28-HM.

Monel bars were installed in the first jordan in 1920. A second jordan was equipped in 1921, a third in 1923, and additional jordans in 1924 and 1930. The bars installed in 1924 were still in service in 1935 after 11 years of use, and others are still in service in 1940.

The comparative operating data and cost of the steel, bronze, and Monel fillings were investigated after the latter fillings had been in use for 7 years. The data from this investigation made in collaboration with the mill are given in Table I. Table II shows the results submitted by mills which have used Monel jordan fillings for at least 9 years. The operating data and remarks are from reports made on these installations in 1937 and again in 1940.

Paperboard Mill Services

Paperboard mills have been reluctant to install corrosion-resisting fillings because of their higher initial cost. Experience with fillings shows that these mills obtain the same advantages from Monel bars as are obtained by the paper mills.

One mill, for example, installed a Monel plug and shell filling in a jordan operating on alum-treated top-liner stock (pH 4.5 to 5). This jordan refines 25 tons of stock during a 24-hour day, 5 days each working week. The performance of the Monel bars and of the steel bars in this jordan is shown in Table III, and Table IV gives the compositions and hardness values of these filling materials. The comparative annual operating costs and the savings effected in this jordan are given in Table V.

Refining Characteristics

In order to meet the full range of mechanical properties demanded, three distinct grades have been developed. The distinguishing characteristics of these three grades are their differing mechanical properties. In line with commercial practice and for convenience, these grades are designated by their minimum Brinell hardness values as shown in Table VI.

Bars of this alloy do not tend to develop a feather edge nor do they chip off at the striking edge, but retain a smooth working surface which means that the entire working surface of the filling does its work of refining at full capacity.

TABLE V.—COSTS OF MONEL[1] AND STEEL[2] JORDAN FILLINGS ON TOP LINER

Material Costs	Steel	Monel
Plug filling including bars and woods..	$116.00	$408.00
Shell filling including bars and woods..	121.00	338.00
Total[3]	237.00	746.00
Average life of filling	5 months	In good condition after 19 months' service. (Estimated minimum total life 3 years)
Annual filling cost of Jordans		
Steel $237 × 12/5	$568.80	.....
Monel $746 × 12/19	.....	$471.16
Replacement labor		
Steel Filling		
Remove and fill shell and plug and install taking 24 man-hr. @ $0.85 = $20.40 2 times/year	40.80	.....
Monel bars		
None in 19 months		
Wood Chipping		
Steel Filling		
Once during 5-month life of each steel filling—taking for each chip 12 man-hr. @ $0.85 = $10.20 × 2 times/year	20.40	.....
Monel filling		
Opened after 10-month operation, chipped slightly woods of the "small end" only of plug and shell. For purpose of this computation cost is figured as one complete chip per year at 12 man-hr. @ $0.85	.....	10.20
Filling cost of jordan per year	$630.00	$481.36
Actual saving effected by monel filling in first year of operation $630 less $481.36	$148.64	
Estimated annual savings effected by monel filling if anticipated minimum life of 3 years is attained $481.36 × 3 less $630.00 × 3	$445.92	

[1] Installed May, 1939.
[2] High carbon steel.
[3] 1939 costs.

TABLE VI.—COMMERCIAL MONEL JORDAN BAR GRADES
(Cold Drawn or Cold Rolled Material)

Minimum Hardness Specification (Brinell 3000 kg.)	Predominant Refining Characteristic Based on Practical Experience
165	Combined brushing and cutting, most action on brushing side.
200	Combined brushing and cutting, most action on cutting side.
250	Most action on cutting side, selected also for use in severely abrasive and erosive services.

Experience has shown that there is no one determinable property of a material which is outstanding as a measure of its probable suitability for jordan

TABLE III.—OPERATING RECORD OF MONEL AND STEEL JORDAN FILLING IN JORDAN OPERATED ON TOP-LINER STOCK

Filling Material	Installed	Chipped	Removed	Life
Steel				
¼ inch Plug bars	May 31, 1938	once	Aug. 22, 1938	3 months
¼ inch Shell bars	March 26, 1938	once	Aug. 22, 1938	5 months
(Records over 3-year period show that steel bars in plug and shell averaged 5 months service.)				
Monel ¼ inch Plug and shell bars	May 27, 1939	Opened for inspection March, 1940 after 10 months' use. Chipped slightly woods of the small end only. Bars had a smooth and even working surface, no "wash" and no signs of active corrosion. Bars had thinned slightly and showed some slight indication of sluffing off at the extreme large ends of the plug.		After 19 months, still in good condition. Est. minimum life 3 years.

TABLE IV.—COMPOSITIONS* AND HARDNESS OF MONEL AND STEEL JORDAN FILLING IN TABLE III

Filling Material	Nickel %	Copper %	Iron %	Chromium %	Molybdenum %	Silicon %	Manganese %	Carbon %	Brinell Hardness 3000 kg.
Monel Plug and Shell bars	67	30	1.4	...	...	0.1	1.0	.15	225
Steel plug bars	0.05	..	Bal.	0.01	0.01	...	1.27	0.56	220—240
Shell bars	0.40	..	Bal.	0.19	0.03	...	0.65	0.70	220—235

* Analyses are actual for steel and nominal for Monel.

service. Obviously corrosion resistance is desirable, and the nature of what corrosion may occur should not be such as to aggravate mechanical effects, as by the development of stress raising pits or notches which are capable of leading to failures in fatigue. The material should not be susceptible to the combined effects of corrosion and either internal or applied stresses which may lead to cracking of vulnerable materials under conditions where the single effects of corrosion and stress should not be sufficient to cause failure.

Mechanical Properties

So far as the purely mechanical properties are concerned, these may be determined in many instances by the choice of a material on the basis of what the jordan is required to accomplish in the way of the brushing or cutting. The desirable mechanical properties include high strength, high ductility, and resistance to mechanical shock which is usually measured in terms of impact properties.

The mechanical properties of Monel fulfill the requirements of high strength, ductility, and toughness without an excessive response to work-hardening effects. Table IX gives typical values for tensile properties, modified impact and hardness values for the three grades of jordan bars. The specimens used in determining the data were taken from actual bars. Because of the sections involved, this made it necessary to modify the test specimens as described. The tensile tests were made by standard methods using specimens measuring 1.5 inches wide, by the full thickness of the bars.

TABLE VII.—OPERATING RECORD OF STEEL, BRONZE, AND MONEL FILLINGS

(On book grades handling 25 tons in 24 hours, 289 r.p.m., 175 hp.)

Filling Material	Life in Months	Remarks by Mill with Regard to Refining Characteristic and Life
Steel	5.5	This is the only jordan servicing the paper machine. It is desired that the stock be cut and thoroughly prepared. Steel filling gave the desired "cutting" action, but was unsatisfactory with respect to length of life. The Monel filling is satisfactory from the standpoint of life, but does not produce the "cutting" action desired. The action of the Monel bars is more of a "brushing" and "hydrating" action, similar to that given by bronze bars. Fillings used subsequently are of a special corrosion resisting alloy steel which cuts the stock as desired and gives good life.
Bronze	11.5	
Monel 1st filling	28 months Aug. 2, 1933-Jan., 1936	
2nd filling	34 months Feb. 1936-Nov. 1938	

TABLE VIII

Monel plug and shell filling in "Majestic" jordan 320 r.p.m., 175 hp., motor drive. This Jordan handles approximately 35 tons per 24 hours of coating raw stock and is operated up to the capacity of the motor.

Operating Record	Life	Refining Characteristics
Monel Filling—Installed .....October 4, 1931 Chipped .....March 21, 1937 Filling taken from service...June 16, 1938	6 years and 9 months	brushing action

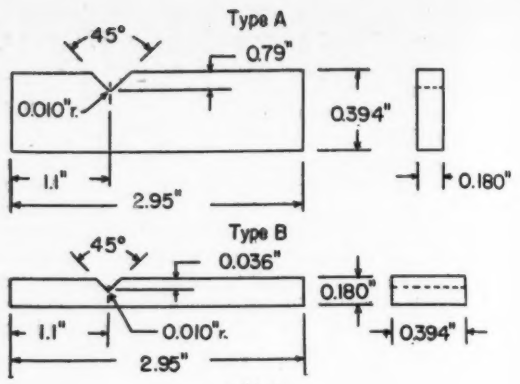

FIG. 1
Modified Impact Specimen

The selection of a 750 kg. load with 5 mm. ball for Brinell hardness readings seemed to provide the best test conditions, considering the wide hardness range of currently used jordan bar materials, and the fact that some bars are as thin as ⅛ inch Brinell readings taken with this setup are comparable to readings made with the standard 3000 kg. load and 10 mm. ball.

First Impact Tests

Full size Izod specimens could not be machined from the majority of jordan bar thicknesses, and it was necessary therefore to use a modified specimen. The first impact tests made on actual bars that have come to our attention were tests made in 1937 by Crescent Laboratory Service for E. D. Jones & Sons Co., Pittsfield, Mass. The specimens this laboratory used were 0.3937 inch wide by 0.25 inch thick with a 45 deg. included angle notch. Since it was desired to study the impact properties of 3/16-inch (0.187 inch) thick bars it was found to be expedient to modify the specimen further in order to make it more adaptable. Figure 1 shows the dimensions of the two types of specimens that have been adopted for obtaining the impact values on Monel jordan bars. Exploratory tests on a number of materials varying in impact properties demonstrated that the use of such modified specimens enabled the accurate measurements of difference in impact values at least within the range from 6 to 48 foot-pounds. Manufacturers and users of jordan bars might adopt such a modified Izod specimen as standard so as to enable data on impact properties to be determined and reported uniformly.

Acknowledgment

The assistance of the manufacturers of jordan fillings in particular the Appleton Machine Co., the E. D. Jones & Sons Co., the Noble & Wood Machine Co., and Shartle Brothers Machine Co. is acknowledged.

TABLE IX.—MECHANICAL PROPERTIES OF MONEL COLD ROLLED JORDAN BARS

Condition	Tensile Properties: Tensile strength psi	Tensile Properties: Yield strength (0.2% offset) psi	Tensile Properties: Elongation in 2 in. %	Impact Properties Modified Izod Ft.-Lb.: Type A 0.180 x 0.394 inch, 0.079 notch depth on 180 inch face	Impact Properties Modified Izod Ft.-Lb.: Type B 0.180 x 0.394 inch, 0.036 notch depth on 0.394 inch face	Hardness: Brinell 5 mm. ball 750 kg.	Hardness: Rockwell (C Scale)
165 BHN minimum hardness..	91,000	77,750	43.5	45	25	188	10
200 BHN minimum hardness..	107,500	99,250	15.5	36	23	235	20.5
250 BHN minimum hardness..	133,000	122,750	13	27	16	268	26

Conditioning Water with the Spaulding Precipitator*

By Eskel Nordell[1]

Abstract

The Spaulding precipitator is a new type of equipment employed for water softening and the removal of turbidity, color, taste, odor, and silica. By bringing the water into intimate contact with and filtering it through a suspended blanket of previously formed sludge, it uses chemicals and adsorbents at maximum efficiency, inhibits supersaturation; prevents "after deposits"; produces stable, clear effluents; reduces the detention periods to one quarter to one eighth of those previously employed and occupies less than one half the ground space required with the conventional types of equipment. It is applicable to existing reaction and settling basins and tanks.

The cold lime or lime soda process of water softening has been in use for practically a century. As is well known, it is a precipitation process. The chemicals used as precipitants are lime or lime and soda ash plus usually a small amount of coagulant. The precipitates produced are chiefly calcium carbonate or calcium carbonate and magnesium hydroxide.

Originally treatment was carried out by the intermittent or batch process but, this proving cumbersome, a continuous process was later developed. In the continuous process, the water was dosed with chemicals and settled as it slowly passed through a tank or basin. The precipitates formed settled out in the bottom of the tank or basin in the form of a sludge and this sludge was withdrawn either peri-

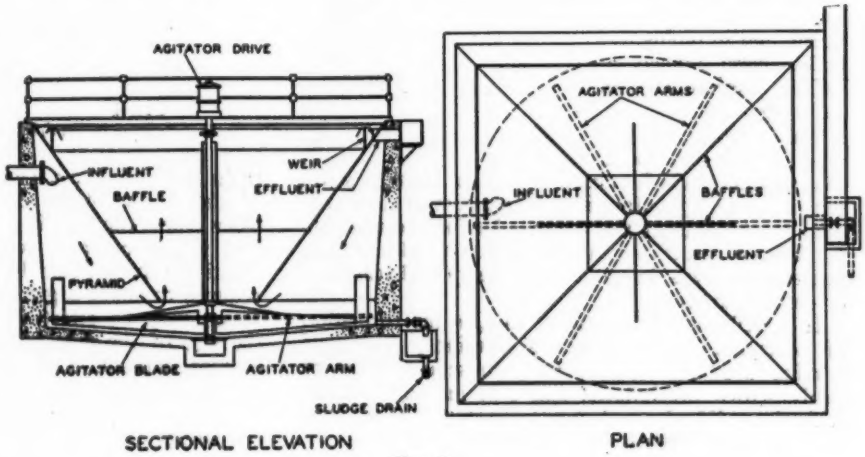

FIG. 2
Square Spaulding Precipitator

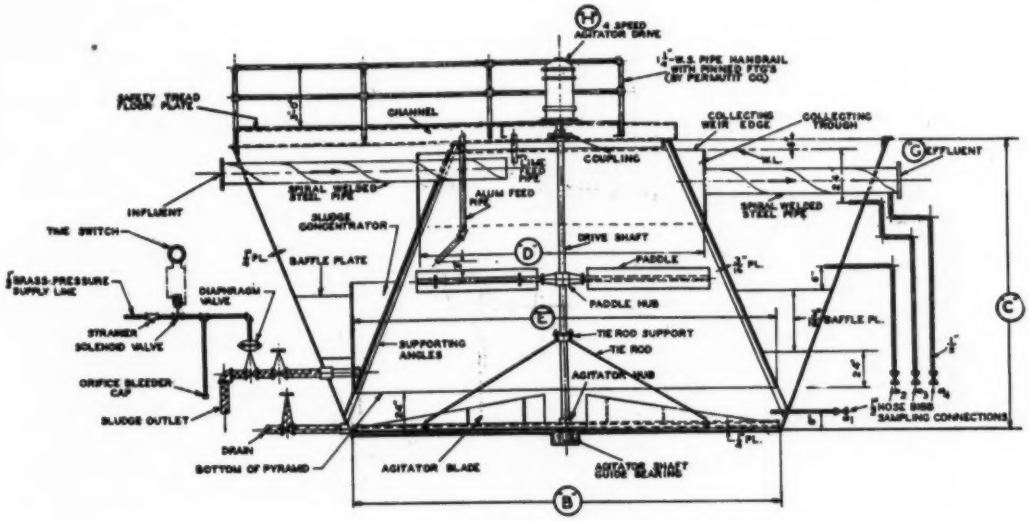

FIG. 1
Spaulding Precipitator

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Technical Department, The Permutit Co., 330 W. 42nd street, New York, N. Y.

odically or continuously.

In practice, it was found that there were certain limitations and difficulties attached to this process. One was that the dosages of lime required were above the theoretical. Another was that, even with the conventional 4-hour detention period, a stable effluent was not produced. Instead, precipitation slowly took place in the effluent and these precipitates, formed on the sand grains of the filters, used for filtering the effluent, and in piping and tanks, were known as "after precipitates" or "after deposits".

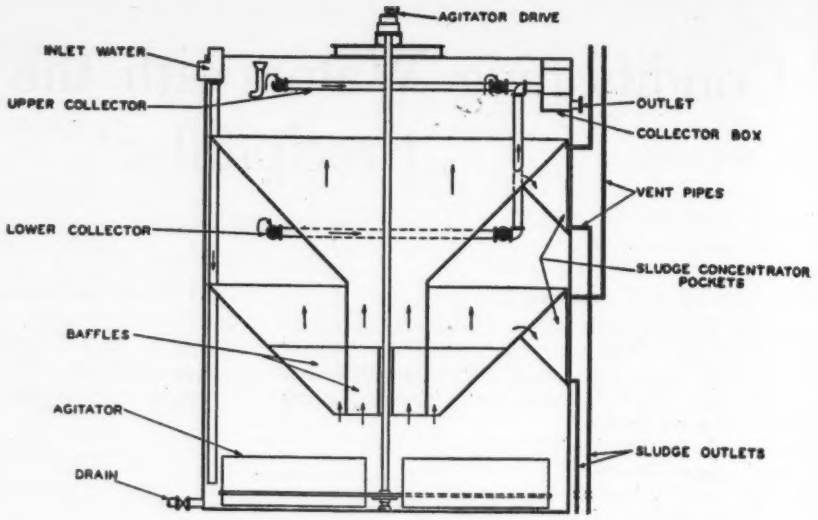

FIG. 4
Double Deck Spaulding Precipitator

The wastage of lime was chiefly due to its low solubility which caused a portion of it to settle out in the sludge before it could react with the hardness constituents of the water. As for the unstable condition of the effluent, which caused it to form after deposits, this was due either to uncompleted reactions or supersaturation.

It is well known to chemists that, in the formation of precipitates from aqueous solutions, prolonged stirring produces coarser and, consequently, more easily settled precipitates, and that intimate contact with the solid phase destroys supersaturation, thus stabilizing the system.

The Spaulding Precipitator

The practical application of these principles to the cold lime soda process was solved by Charles H. Spaulding and the equipment used in carrying it out is known as the Spaulding precipitator. In this, by means of bringing the treated water in contact with the suspended precipitates, through a novel design and operation of the settling tank, results are achieved which are impossible with the older types of lime soda water softener. The size of the settling basin is reduced to a 1-hour detention period instead of the 4- to 8-hour detention period used in the older types; the lime is used so much more efficiently that theoretical and actual dosages are practically identical; the calcium bicarbonate alkalinity may be reduced to about 2 grains per gallon or less; stabilization may be effected without recarbonation; and the size of the precipitates is so much greater that coarser sand and, consequently, greater filtration rates may be employed in the filters.

These results are accomplished by utilization of the sludge from previously formed precipitates. In carrying out this process the water is treated with lime or lime and soda and thoroughly mixed with previously formed sludge by means of a mechanical agitator, situated in the bottom of the precipitator.

The mixture then rises through a sludge filter zone where it comes in intimate contact with a suspended sludge blanket. The sides of this zone are sloped so that the water, as it rises, spreads out and consequently its upward velocity decreases. It finally reaches a level such that the velocity is low enough to leave the sludge particles behind therefore the effluent emerges from the top of the precipitator clarified, softened, and stable.

Due to the intimate contact of the sludge blanket with the treated water, stabilization of the water is effected as these conditions inhibit supersaturation. The precipitated particles are coarser in nature and settle more readily. This zone of suspended precipitates functions likewise as an upflow filter, thus assuring a greater clarification of the treated water than could be obtained otherwise.

The mixing period in the precipitator is 30 to 40 minutes. This is about three times as

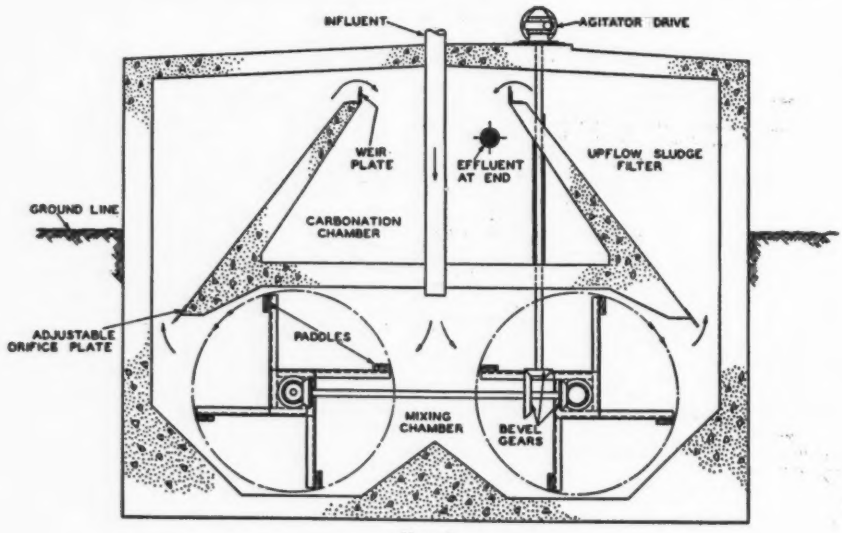

FIG. 3
Rectangular Spaulding Precipitator

great as in the older design. On the other hand, the settling period need only be from 20 to 30 minutes, which is only one eighth to one twelfth of the settling period required in the older type. In the Spaulding design, the sludge is removed through a simple concentrator chamber thus eliminating the expensive sludge scraping or collecting systems formerly used. A Spaulding precipitator plant occupies less than half the ground space formerly required.

Precipitator Designs

Various designs of Spaulding precipitators are shown in Figs. 1, 2, 3 and 4. Figure 1 is similar to an inverted frustrum of a cone; Figure 2 is square; Figure 3 is rectangular, and Figure 4 is a double decker design. In all of these, it will be noted that the portion through which the treated water rises has sloping sides so that the cross-sectional area increases upwardly. This increasing cross-sectional area means a constantly decreasing upward velocity of the treated water, and therefore this assures the most efficient settling of the precipitates formed by the treatment.

These designs may be applied to many existing reaction and settling basins or tanks of the older type thus converting them to Spaulding precipitators with consequent increases both in efficiency and capacity. In the case of tall tanks, conversion to the double deck design is often applied as this very obviously doubles the settling and drawoff areas.

Removal of Calcium Alkalinity

With the precipitator, various degrees of calcium and magnesium hardness reduction may be obtained by varying the dosages of chemicals employed. For instance, where a hard water is warmed, calcium bicarbonate alone is responsible for scale formation. This is often the case with screens, deckers, recirculating equipment, pumps, condensers, cooling jackets, etc.

In such cases, of course, where the scale consists of calcium carbonate, removal of the other hardness constituents is not only unnecessary but constitutes a needless operating expense. Therefore, in such cases, the water is treated with just enough lime to reduce only the bicarbonate hardness to a point at which it will not form the troublesome calcium carbonate scale. This point is approximately 2 grains per gallon or about 35 p.p.m. of calcium bicarbonate alkalinity.

Recovery of Lime from Sludge

Since the sludge produced consists almost entirely of calcium carbonate, recovery of the added lime plus that precipitated from the water may be practiced and this greatly reduces treatment costs. Considering only the calcium bicarbonate removal, the amount of lime recovered from the sludge is twice the amount of lime added because each equivalent of lime added is not only precipitated but it precipitates an equivalent amount of lime from the water too.

This is shown in the following reactions in which both the added lime and the recovered lime are in *italics* in order to show the quantity relationship.

1. Slaking — $CaO + H_2O = Ca(OH)_2$
2. Softening — $Ca(OH)_2 + Ca(HCO_3)_2 = 2CaCO_3 + 2H_2O$
3. Reburning — $2CaCO_3 = 2CaO + 2CO_2$

Therefore two tons of lime are recovered for every ton of lime added and this leads to some interesting conclusions. If a mill is constantly buying quantities of fresh burned lime; if it is equipped with lime recovery equipment and if the cost of recovered lime is not over half the cost of purchased lime, then the cost of lime for water treatment is practically nothing because twice as much is recovered as was added. Even in those cases where this relationship between the costs of the added lime and the recovered lime do not exist, it is obvious that the cost of treatment for removal of calcium alkalinity alone is low.

Removal of Calcium and Magnesium

By using larger dosages of lime removal of the magnesium, as the hydroxide, may be effected. By adding soda ash, as well as lime, removal of the noncarbonate hardness as well as the bicarbonate hardness may be effected.

Therefore, by varying the treatment, various degrees of hardness removal may be effected down to a practical limit of somewhat less than 1 grain per gallon or 17 p.p.m. The size of the precipitator remains the same for all of these various softening procedures, because the governing factor in determining its size is the flow rate and not the hardness of the raw water nor the degree to which it is to be softened.

Table I of analyses are taken from the operating results of two precipitator plants, operating on different waters and for different purposes. In the first, a removal of calcium bicarbonate alkalinity is effected. In the second, a reduction of all of the hardness constituents is effected. All results, except pH value, are expressed in p.p.m.

TABLE I

	A		B	
	Raw	Softened	Raw	Softened
Total Hardness as $CaCO_3$	234	86	136	19
Calcium Hardness as $CaCO_3$	178	31	118	11
Magnesium Hardness as $CaCO_3$	56	55	18	8
M. O. Alkalinity as $CaCO_3$	193	43	5	68
Phen. Alkalinity as $CaCO_3$	0	17	0	45
Causticity as $CaCO_3$	0	0	0	22
Free Carbon Dioxide as CO_2	14	0	16	0
Turbidity	5	3	40	3
Color	15	5	10	5
pH Value	7.4	9.5	5.8	10.8

Removal of Turbidity and Color

Besides being used for softening water, the precipitator is employed for the removal of turbidity, color, taste, odor, and silica. Its value in removing these constituents lies largely in that the intimate contact afforded utilizes to the full extent the coagulating and adsorbent powers of the treating material employed and that the upward filtration and settling obtained yields a clearer effluent than the conventional type of equipment.

Table II shows turbidity removal from a highly varying turbid river water by a 3,000,000 gallons per day precipitator:

TABLE II.—RESULTS IN P.P.M.

Turbidity in Raw Water	Turbidity in Precipitator Effluent
50	5
600	5
1600	5
2500	5
1600	5
2000	10

Table III shows the color removal effected on a difficultly coagulable, highly colored surface water by a Spaulding precipitator, employing alum and clay, followed by filtration.

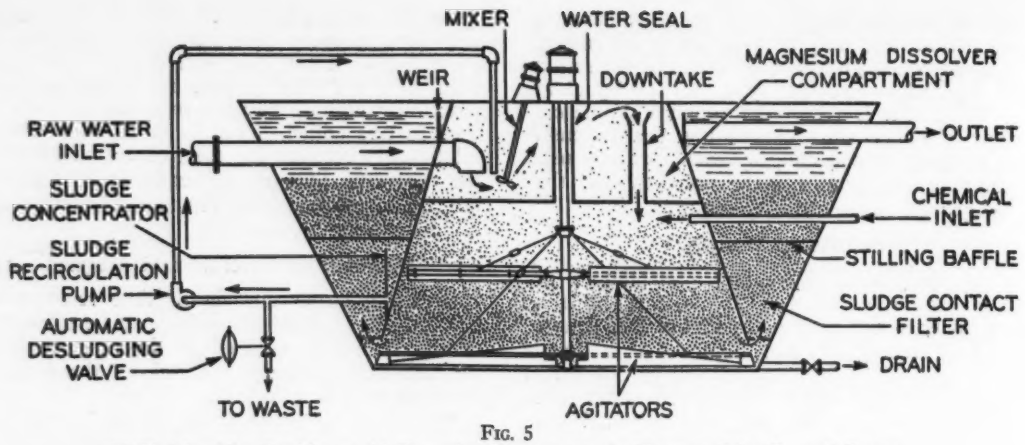

FIG. 5

Modified Spaulding Precipitator with Magnesium Dissolver, etc., for Magnesia Silica Removal Process

TABLE III.—RESULTS IN P.P.M.

Date	Raw Water		Effluent from Treatment Plant	
	Temp., deg. C.	Color	Color	pH Value
Jan. 1	6	58	2	6.0
Jan. 2	6	56	4	6.2
Jan. 3	6	56	2	6.1
Jan. 4	6	60	3	6.1
Jan. 5	4	60	3	6.0

Removal of Tastes and Odors

Tastes and odors in water are often due to minute amounts of oily materials derived from organic growths. Activated carbon is widely used for the removal of tastes and odors and is usually applied, in powdered form, to the water in the settling basin. When so applied it sinks into the sludge before its adsorptive powers have been fully used. When used in the precipitator, it has been found that its adsorptive powers are more fully utilized.

One such instance was that of a plant that was using a water having a taste and odor content so high that it was necessary to use 65 p.p.m. of activated carbon in the conventional type of settling basin. When the same water was treated in a precipitator, the dosage of activated carbon was reduced to 40 p.p.m. thus effecting a saving of 25 p.p.m. or slightly over 38%. Other tests have shown similar magnitudes of savings ranging from 33% to somewhat over 40%.

Silica Removal

With the advent of high-pressure boiler plants, silica removal has come into prominence as a means of preventing the formation of silica scale. The removal of silica is accomplished by means of the adsorptive powers of various hydrated metallic oxides such as those of magnesium, iron, and aluminum. In these processes, it has been found necessary to use a fairly large initial amount of sludge to which small dosages of fresh adsorbent are continuously added and corresponding amounts of used sludge continuously withdrawn.

In operating under such conditions, an intimate and prolonged contact of the water and sludge is necessary in order to utilize to the fullest extent the silica adsorbing properties of the sludge. It is equally obvious that the conventional type of reaction and settling basin or tank does not afford a prolonged and intimate contact between the water and the sludge.

The precipitator, due to the prolonged and intimate contact afforded both in the mixing chamber and the semi-suspended sludge blanket, has been found particularly applicable for silica removal. Figure 5 shows a Spaulding precipitator unit as applied to silica removal with a magnesium silica adsorbent. This adsorbent has the advantage of not adding any soluble constituents to the treated water. With certain classes of waters, other silica adsorbents may be applied and, as these likewise depend for their functioning on the intimate contact of the water with a sludge, the precipitator is equally applicable.

Additional Information

(1) Applebaum, S. B., "Cold lime soda water softening," *Ind. Eng. Chem.*, vol. 32, p. 678 (May, 1940).
(2) Tiger, H. L., "Silica Removal by an Improved Magnesia Process," Joint Research Committee on Boiler Feedwater Studies, 61st Annual Meeting A. S. M. E. (Dec. 2, 1940).
(3) Spaulding, C. H., "Some new practices in water softening," *Water Works Sewerage*, vol. 85, no. 3 (March, 1938).
(4) Spaulding, C. H., "Conditioning of water softening precipitates," *J. Am. Water Works Assoc.*, vol. 29, no. 11 (Nov., 1937).
(5) Spaulding, C. H., and Timanus, C. S., "The new water purification plant for Springfield, Ill.," *J. Am. Water Works Assoc.* 27:327 (1935).
(6) Nordell, Eskel, "De-Alkalizing brewing waters with the Spaulding precipitator," *Brewers Digest* (Dec., 1940).

Roberts' Grinder*

By A. E. Bartlett[1]

Abstract

A description of a design of pulp grinder using the horn angle principle. Simplicity of design and operation, compactness, and lack of auxiliary equipment are some of the attributes of this machine. Comparative test data are given.

We are all interested in producing groundwood pulp of high quality at a reasonable cost per ton for power for its production and the investment cost

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.
[1] Member TAPPI, General Superintendent, Algonquin Paper Corp., Ogdensburg, N. Y.

per ton. We have to consider high-capacity equipment that leads towards economy and labor saving.

Pulp grinding machinery is heavy, bulky, high power consumers, and requires much auxiliary equipment. Furthermore, wood is bulky and takes up much space. These result in (a) high initial cost, (b) high driver cost, (c) large buildings, high cost, (d) additional labor for maintenance, and (e) additional power for auxiliary. These factors lead to a high cost per ton, both in operation and investment. The best known types of grinders now used are the pocket, the magazine, and the continuous chain. All of these types are giving fairly satisfactory results.

The Roberts grinder is not only compact, it produces at a high rate a clean type of stock at a low horsepower rate per ton.

Construction

A large cast iron ring, 8 feet in diameter, is mounted inside a cast iron housing so that the ring saddles in a trunnioned frame. This frame is mounted on a base to allow the ring to be adjusted to the stone. This whole arrangement is mounted eccentrically around a grindstone (say 54 inches diam.) so that the ring almost contacts the stone at about the 7 o'clock position. This then leaves a small space on the one side and a large crescent space on the other side. In this larger space a baffle is built to form a loading pocket for the wood. On the narrow side a baffle is built to form a sliver pocket. (*See* Figs. 1, 2, and 3.)

The ring (Fig. 4) is rotated by an oil motor, which can be run at various speeds. The lathe, heavily built, is mounted above the stone and is operated by an oil motor. The lathe head carries through the back frame to make burr changing accessible. Mounted behind the wood pocket baffle is the shower so that the stone can be cleaned before it contacts the wood.

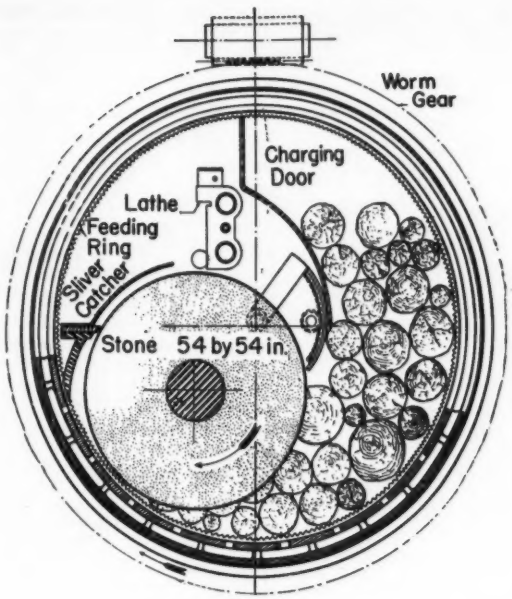

FIG. 3
Application of the Wood to Grinder.

The casing is so built that the stock when ground is forced through large breathing holes in the inner wall of the housing which forms a channel for the stock with the outer wall of the frame. In this channel is mounted a controlling weir.

Figure 5 shows an installation.

Operation

The stone is rotated, by whatever power that is used, at a constant speed (240 r.p.m.), and the ring is rotated in the same direction as the stone. Wood is then loaded into the pocket and filled up to the limit (this is usually about half a cord).

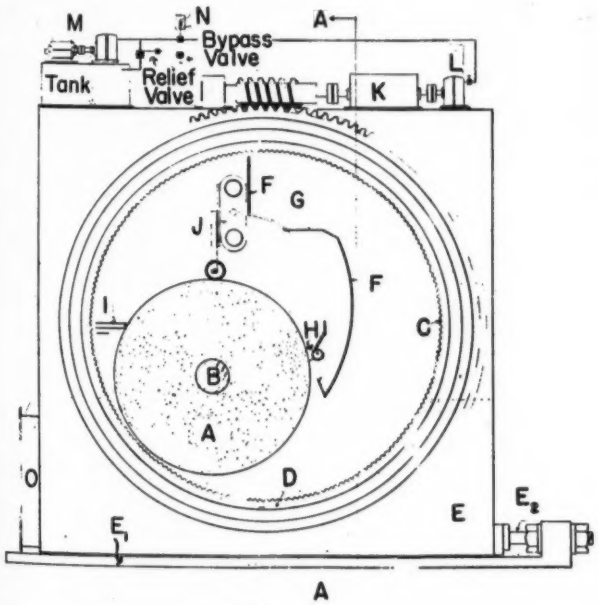

FIG. 1

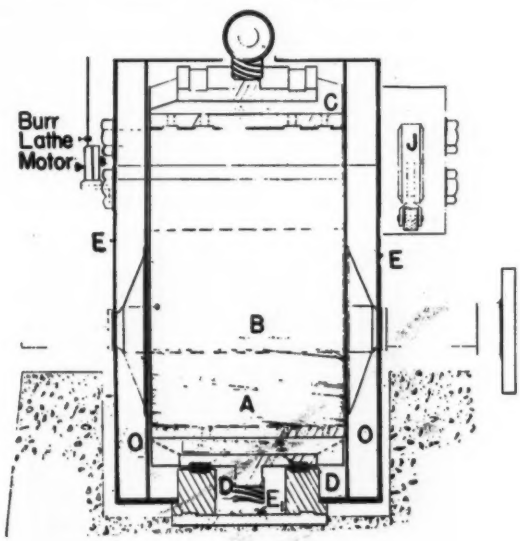

FIG. 2
Section A-A (See Fig. 1)

A. Grind Stone, B. Shaft Connected to Prime Mover, C. Rotating Toothed Ring, D. Trunnioned Saddle, E. Frame Supporting Ring "C," E1. Base, E2. Adjusting Screws, F. Baffle, G. Loading Pocket, H. Shower, I. Sliver Catcher, J. Burring Lathe, K. Variable Speed Gear Set, L. Oil Motor, M. Motor-Pump Unit, N. Magnetic Controlling Valve, O. Stock Discharge Channel.

TABLE I.—MIXED WOOD, ABOUT 50%, 2060 POUNDS BALSAM—50%, 2350 POUNDS SPRUCE
(Test 1—Oct., 1939)

Week	Grinder	Tons	Tons/Line	Hp./Ton	Freeness
1	Roberts	206	23	52	199
	2 3-Pocket	803	21	58	184
2	Roberts	158	23	53	199
	2 3-Pocket	584	21	57	190
3	Roberts	123	23	54	95
	2 3-Pocket	615	20	58	174
4	Roberts	160	24	54	145
	2 3-Pocket	570	19	61	148

	Average		
	Roberts	3-Pocket Grinders	Improvements with Roberts
Tons	23	20	15% Greater
Hp.	53	58	9% Lower
Freeness	158	177	Slower

(Test Jan.-Feb., 1941 for 6-week period)

	Tons	Hp. Ton	Freeness
Roberts grinder	801	55	186
Balance, all grinders, 6 lines, 6 pockets each	3396	63	178

TABLE II.—POWER INPUT RELATION TEST
(Test 2. Oct., 1939)

High Power Input (1000-1030 kw.)

Grinder	Tons	Hp.	Freeness	
Roberts	19.4	66	84	No auto. reg., no temp. control
3-Pocket, ave.	21	56	190	Temperature control

Low Power Input (900 kw.)

Roberts	23	52	199
3-Pocket	20	58	184

TABLE III
(Test 3. Period 48 Hours; Wood, 2290-pound Yield)

Roberts vs. 2 Lines of 2-Foot Grinders (4 Grinders)

	Tons	Hp.	Freeness
Roberts	44	53	144
Line 3	41	61	161
Line 4	38	70	137
	Average		
Roberts	44	53	144
Lines 3 and 4	40	65	145
Improvements, %	12	19	...

The wood contacts the stone for about 50 inches and grinding takes effect over this whole area, pressure being applied through the ring rotation and weight of the wood. As the wood is ground the pulp passes out sideways through slots in the inner frame into the stock outlet channel. Slivers will work through the nip but are caught by the sliver catcher at the back and ground. The pulp is forced out of the grinder through the channel on each side and dams are inserted in this outlet to whatever control is required.

The ring speed can be varied to create varying pressures, and therefore different rates of grinding and various qualities of pulp can be obtained. The

FIG. 4

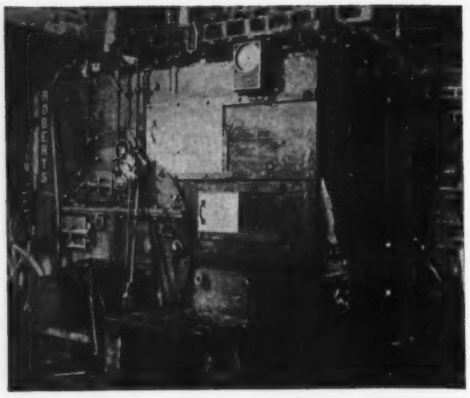

FIG. 5

speed is controlled by an electrically operated valve in the oil motor line, and this is kept under control by the motor input.

Results

The results obtained with this machine are compared with a line of two 3-pocket grinders, using the same wood and operating side by side. All freeness tests were made with the Williams freeness tester.

TABLE IV
(Test 4—Roberts' Grinder vs. One Line of Two 34-in. Stone 3-Pocket Grinders)

Conditions	Roberts	Line 2
Speed, r.p.m.	240	240
Stone size, in.	54 x 53	34 x 50, 34 x 52
Pressure	73 f.p.m. ring speed	1245 in.-lb.
Pressure at stone		39.3 lb./sq. in.
Submersion, inches	27	85 & 12
Temperature, deg. F.	183	182-180
Consistency, %	4.17	7.27
Available grinding area, sq. in.	2700	2650
Active grinding area, sq. in.	2450	1902
Stone condition	poor-mark broken	good
Burr	1.5 x 11	1.25 x 8
Tons	25.112	17.8
Kw. hr./ton	898	1140
Hp./ton	50.1	63.7
Freeness	211	88
Wood yield, pounds	2292	2292

(Test 5)

Classification	Roberts		3-Pocket Grinders, ave.	
Freeness	94		140	
Rejects (10-cut plate), %	1.30		3.17	
Burst pt. per lb., %	45		36	
Tear ratio	70		67	
Bulk—cc. per g.	1.60		1.85	
Consistency, %	3.2		5.0	
Retained 28 mesh, %	15.8		21.5	
Retained 48 mesh, %	15.6		13.9	
Retained 100 mesh, %	18.5	49.2	18.5	46.3
Retained 200 mesh, %	15.1		13.9	
Past 200 mesh, %	35.0		32.2	
Burst ratio at 100 freeness	44.0		40.2	

TABLE V
(Test 6—Classification Test—Nov. 30, 1940)

	Line 2 Retention, %		Roberts Retention, %	
Mesh	Per Mesh	Accumulation	Per Mesh	Accumulation
20	11.53	11.53	19.57	19.57
35	13.16	24.69	16.59	36.16
65	17.18	41.87	15.51	51.67
150	11.71	53.58	10.2	61.87
200	46.42	100.00	38.13	100.00

Conclusion

The saving that is apparent in our mill, where we make about 110 tons of groundwood per day, is roughly about $50,000 per year, and this is estimated from our tests to be the result of savings in: power, labor, sawdust, repairs, auxiliary equipment, and auxiliary power.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING APRIL 26, 1941

SUMMARY

Cigarette paper .....230 cs.
Newsprint .....9,496 rolls
Filter paper .....18 cs.
Drawing paper .....3 cs.
Tissue paper .....4 cs.
Tracing cloth .....15 cs.
Miscellaneous paper .....9 cs.

CIGARETTE PAPER

——, ——, Barcelona, 230 cs.

NEWSPRINT

——, ——, Liverpool, N. S., 6,051 rolls.
——, ——, Port aux Basques, 3,445 rolls.

FILTER PAPER

H. Reeve Angel & Co., Inc., ——, Liverpool, 18 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., ——, Liverpool, 3 cs.

TISSUE PAPER

——, ——, Liverpool, 4 cs.

TRACING CLOTH

——, ——, Liverpool, 15 cs.

MISCELLANEOUS PAPER

Victory Shipping Co., ——, Shanghai, 9 cs.

RAGS, BAGGINGS, ETC.

Murbas Trading Corp., ——, Buenos Aires, 11 bls. rags.
Richard Shipping Co., ——, Buenos Aires, 7 bls. rags.
New England Waste Co., ——, Rio de Janeiro, 159 bls. cotton waste, 3,919 bls. cotton linters.
——, ——, Rio de Janiero, 10 bls. cotton waste, 139 bls. cotton residue.
Williamson Products Co., ——, Santos, 124 bls. cotton picker waste, 456 bls. cotton linters.
Hercules Powder Co., ——, Santos, 1,053 bls. cotton linters.
——, ——, Buenos Aires, 45 bls. rags.
Castle & Overton, Inc., ——, Buenos Aires, 24 bls. hosiery, 10 bls. thread waste, 5 bls. old merinos.
Kauders Steuber Co., ——, Buenos Aires, 722 bls. cotton linters.
——, ——, Liverpool, 17 bls. thread waste, 58 bls. paper stock, 40 bls. rags.
Philadelphia National Bank, ——, Buenos Aires, 5 bls. rags.
Hercules Powder Co., ——, Buenos Aires, 408 bags cotton linters.
West Texas Cottonoil Co., ——, Buenos Aires, 409 bls. cotton linters.
Tradesmans Natl. Bank Trust Co., ——, Buenos Aires, 879 bls. cotton linters.
——, ——, Santos, 271 bls. cotton linters.
New England Waste Co., ——, Buenos Aires, 568 bls. cotton linters.
New England Waste Co., ——, Shanghai, 100 bls. cotton waste, 160 bls. cotton picker waste.
Green Textile Associates, ——, Shanghai, 100 bls. cotton waste.
E. C. Andres, ——, Shanghai, 20 bls. cotton waste.
Camden Fibre Mills, ——, Shanghai, 100 bls. cotton waste.
Padawer Co., ——, Shanghai, 275 bls. cotton waste.
Brandwein Mazur Co., ——, Shanghai, 63 bls. cotton waste.

CASEIN

American British Chemical Supplies, ——, Buenos Aires, 1,000 bags.
C. W. Burckhalter, Inc., ——, Buenos Aires, 417 bags.
A. Hurst & Co., Inc., ——, Buenos Aires, 835 bags.
K. Fleischner, ——, Buenos Aires, 500 bags.
Chase National Bank, ——, Buenos Aires, 834 bags.
K. Fleischner, ——, Buenos Aires, 167 bags.

GLUE STOCK

Manufacturers Trust Co., ——, Buenos Aires, 101 bls.
National City Bank, ——, Buenos Aires, 43 bls.
Manufacturers Trust Co., ——, Buenos Aires, 11 bls.

HIDE CUTTINGS

Chase National Bank, ——, Shanghai, 45 bls.

GLUE

Trans Atlantic Animal ByProducts Corp., ——, San Antonio, 150 bags.

BOSTON IMPORTS

WEEK ENDING APRIL 26, 1941

American British Chemical Supplies, ——, Buenos Aires, 500 bags casein.

SAN FRANCISCO IMPORTS

WEEK ENDING APRIL 26, 1941

Ishmitsu Co., ——, Kobe, 5 cs. filter paper.

LOS ANGELES IMPORTS

WEEK ENDING APRIL 26, 1941

Pan Pacific Importers, ——, Yokohama, 5 bls. paper.

Paper Men as Quiz Master and Expert

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 28, 1941—At a meeting of The Bookbuilders, an organization devoted to the interests of book making, which took the form of "Information Please," held April 22 at the Hotel Victoria, Howard Wallingford, of Tileston & Hollingsworth, was Quiz Master, and Philip Hinckley, of the S. D. Warren Company was another expert for the paper manufacturer.

Bibliography for 1936 Wanted

The PAPER TRADE JOURNAL has a request for a copy of the Bibliography of Paper Making, 1936. Anyone having a copy of this work for the year mentioned and willing to dispose of it will confer a favor by getting in touch with the Lockwood Trade Journal Company, 15 W. 47th street, New York, mentioning the price at which the book will be sold.

New York Paper and Pulp Market Review

Backlog Orders For Many Lines of Paper At High Level As Trend In Demand For Most Grades of Paper Continues Upward — Pulp Strong — Old Kraft and Strictly Folded News Higher.

Office of the PAPER TRADE JOURNAL,
Wednesday, April 30, 1941.

Sales volume continues to be reported at a high level in practically all lines of paper, paper board and paper products. Trade reports this week indicate that production in general continues at mill capacity, with orders in many grades steadily rising very substantially over capacity. Because of its wide utility, the consumption of paper is increasing at a more rapid rate now than had been thought possible before the disruption of international trade began during the present European conflict.

The index of general business activity declined to 118.6% for the week ended April 19, from 120.8% for the preceding week, compared with 99.6% for the corresponding week last year. Paper board output was 5.2% lower.

Paper production for the week ended April 19 was estimated at 94.5%, compared with 86.5% for 1940, with 79.6% for 1939, with 67.4% for 1938, and with 90.9% for the corresponding week for 1937.

Paper board production for the week ended April 19 was 78.0%, compared with 72.0% for 1940, with 69.0% for 1939, with 54.0% for 1938, and with 89.0% for the corresponding week for 1937.

Reports in the trade indicate that backlog orders are very high and running in some divisions of the paper industry well over 150% of mill capacity, in some instances. The price situation continues to be a subject of concern in the industry and trade, with no important change from prevailing representative market quotations reported at this date. Some manufacturers have lately announced that on account of the unsettled conditions and the increase in the cost of materials, previous quotations have been withdrawn, with orders subject to confirmation as received. The normal requirements of customers, of course, will be taken care of.

The relatively high market price of pulp compared with the price of paper, is one of the factors unfavorable to the manufacturer or converter who buys pulp. The integrated mills, however, which convert pulp into paper, are in a correspondingly more favorable position. This situation is, of course, present in industries other than paper and pulp, and the problem of raw materials is expected to become more serious as the current economic trend continues.

Chemical Pulp

Consumption of chemical wood pulp continues high and the market is in a strong position. No important changes in prices have been reported this week. Although it may be possible to increase production of domestic and Canadian chemical wood pulp some 10% above current output, opinion in some quarters of the trade is to the effect that as production is now at capacity, increased production would necessarily lower the present standard of quality. During the last world conflict, increased production was frequently obtained at the expense of quality. When the demand for pulp for converting into paper again becomes as urgent, it is possible that a lower standard of quality in pulp may again prove as acceptable as it was during the former conflict.

Rags

Buying of new white rags is reported moderate to good at this date. No important changes have been reported in the prices of any new or old rags this week. Mill buying of the roofing grades continues steady in good volume.

Old Rope and Bagging

The demand for old Manila rope continues active, with more inquiries reported in sisal strings and in jute threads at this date. Prices hold firm and unchanged.

The old bagging market continues to reflect a strong position, under an active demand and uncertainty as to future supply, as current supplies are quite widely reported as relatively small. Prices are unchanged.

Old Waste Paper

The old waste paper market continues easy at this date. Only two important changes in prices have been reported this week. Old kraft, machine compressed bales, is higher and currently quoted at from 1.35 to 1.50. Strictly folded news has also advanced and is currently quoted at from .60 to .65. No price changes reported on any other grades at this date.

Twine

The twine market reflects strength and a good demand is reported for many grades of twine. Prices are firm with marked strength reflected in most imported fibers. No important change from prevailing market quotations has been reported during the current week.

Brotherhood To Be Bargaining Agent

FULTON, N. Y., April 28, 1941—The local branch of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers was voted the bargaining agent for the employes of the Oswego Falls-Sealright Corporation at a meeting held here early last week. The meeting was ordered by the National Labor Relations Board to permit workers to determine whether they wished the International body or the Employees' Protective Association, an independent organization, to be their representative in negotiating agreements with plant management. The tabulated vote following twelve hours of balloting revealed that the International organization to have received 537 votes and the independent union 502. A total of 1,082 employees of the company had been declared eligible to participate in the election. Within a few days it is expected that the labor board will certify the International Brotherhood of Pulp, Sulphite and Paper Mill Workers as the bargaining agent for the employes following which representatives of the newly organized union will confer with the plant management on an agreement.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, April 30, 1941.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported steady for the week. The pulp is currently quoted at $35 per ton in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm with shipments reported in steady volume for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are reported firm. Demand moderate for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 14½ cents per pound; 80-100 mesh, at 15 cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 13 cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are unchanged. Demand reported good for the week. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine is reported active. Prices are firm and the market strong for the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firm with prices lower for the week, "G" gum rosin is currently quoted at $1.78 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $1.76 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.49 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm under a good demand with current quotations continuing nominal. Domestic salt cake is currently quoted at $17 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16.50 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported moderate. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged for the current week. Pearl is currently quoted at $3 per 100 pounds; powdered starch at $3.10 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Shipments reported in good volume for the week. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.60 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$6.00
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.50	"	5.00
Standard Wrapping	4.50	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	31.05 " 36.50	32.20 " 37.75
85% Rag	.... "	29.90 " 35.00
75% Rag	23.60 " 27.75	24.75 " 29.00
65% Rag	.... "	21.65 " 26.25
50% Rag	17.55 " 21.50	18.70 " 22.75
25% Rag	14.65 " 17.75	15.80 " 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$9.35@$11.50	$11.55@$12.75
No. 2	8.50 " 10.25	9.65 " 11.75
No. 3	8.05 " 9.25	9.20 " 11.25
No. 4	7.70 " 9.50	8.90 " 10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	9.05	"	10.50
No. 2 Offset	8.40	"	9.75
A Grade E. F.	8.20	"	9.50
A Grade S. & S. C.	8.45	"	9.75
B Grade E. F.	7.65	"	8.75
B Grade S. & S. C.	7.90	"	9.00
C Grade E. F.	7.35	"	8.50
C Grade S. & S. C.	7.60	"	8.75
D Grade E. F.	7.10	"	8.25
D Grade S. & S. C.	7.35	"	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	3.87½
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.75
Strong Unbleached Sulphite	3.17½	"	3.75
News Grade, delivered			
Unbleached Sulphite	61.00	"	64.25
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	—
Kraft Light & Strong	3.75	"	4.15
Kraft No. 1	3.60	"	4.00
(F. o. b. Pulp Mill)			
Kraft Domestic and Canadian	2.75	"	3.37½
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.00	@	6.25
Silesias No. 1	4.50	"	4.65
New Unbleached	6.00	"	6.25
Blue Overall	4.15	"	4.50
Fancy	3.25	"	3.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.75	"	3.00
O. D. Khaki Cuttings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	3.50	"	3.65
Miscellaneous	2.75	"	3.00
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	1.50	"	1.65
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.35	"	1.40
No. 2	1.05	"	1.10
No. 3 (bagging)	.90	"	1.00
No. 4	.60	"	.65
No. 5A	.60	"	.65

Foreign Rags

All prices nominal.

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	@	3.25
Wool Tares, light....	2.50	"	2.75
Wool Tares, heavy..	2.50	"	2.75
Bright Bagging.....	2.50	"	2.75
Manila Rope—			
Foreign	5.50	"	5.75
Domestic	5.50	"	5.75
Jute Threads.....	2.75	"	3.00
Sisal Strings	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.25	"	2.50
Soft White No. 1..	1.80	"	1.90
Soft White Extra..	2.50	"	2.60
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag.....	.90	"	1.00
Solid Flat Book...	.90	"	1.00
Crumbled No. 1 ..	.70	"	.75
Ledger White Stock.	1.60	"	1.70
Ledger Stock Colored	1.20	"	1.30
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.30	"	1.40
Old Kraft Machine Compressed bales..	1.35	"	1.50
News—			
No. 1 White News	1.75	"	1.90
Strictly Overissue..	.96	"	1.00
Strictly Folded....	.60	"	.65
Corrugated	.57½	"	.62½
No. 1 Mixed Paper..	.42½	"	.47½

Twines

(F. o. b. Mill)

(Soft Fiber)			
Coarse Polished—			
India	.19½	@	—
White Hemp	.19½	"	—
Fine Polished—			
Fine India.....	.22½	"	—
Unpolished—			
Box	.15¾	"	—
Paper Makers.....	.15½	"	—
Tube Rope.....	.16¾	"	—
Wall Paper.....	.19½	"	—
Wrapping	.19½	"	—
Soft Fiber Rope...	.17½	"	—
Cotton	.24	"	—
(Hard Fiber)			
Medium Java.....	.12	"	—
Mex. Sisal.....	.11	"	—
Manila	.25	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.06¾	@	.07
New White No. 2.	.03½	"	.04
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04
Black Silesias, soft	—	"	.03
New Unbleached..	.06	"	.06¼
Washable Prints..	.02½	"	.03
Washable No. 1..	—	"	.01½
Blue Overall.....	.04	"	.04½
Cottons—According to grades—			
Washable shredding	—	"	.01½
Fancy Percales....	.03	"	.03¼
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¾
No. 2 Mixed.....	.01¾	"	.02
Corduroy	.01¾	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.02¼

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.35	"	1.50
Repacked	1.55	"	1.65
Black Stockings (Export)	3.50	"	4.00
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	1.30	"	1.35
Domestic No. 2...	1.10	"	1.15
Roofing Bagging..	1.00	"	1.05

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Domestic	2.75	@	3.00
Domestic	2.50	@	2.75
Manila Rope.....	—	"	5.50
Sisal Rope.....	2.00	"	2.25
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	2.75	"	3.00
No. 2.....	—	"	1.50
Wool Tares, heavy..	3.75	"	4.00
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.00	"	3.25

Old Papers

(F. o. b. Phila.)

Shavings—			
Hard White Special	2.50	@	2.70
Hard White.....	2.35	"	2.40
No. 1 Soft White..	1.90	"	2.00
No. 2 White.....	1.70	"	1.85
No. 1 Mixed.....	.90	"	1.00
Solid Ledger Stock..	1.90	"	2.00
Ledger Stock, white.	1.50	"	1.60
Ledger Stock, colored	1.20	"	1.25
No. 1 Books, heavy..	.85	"	.90
Manila Cuttings.....	1.75	"	1.80
Print Manila.....	.60	"	.65
Container Manila....	.50	"	.55
Kraft Paper	1.40	"	1.45
No. 1 Mixed Paper..	.45	"	.50
Straw Board Chip...	.45	"	.50
Binders Board Chip..	.35	"	.40
Corrugated Board...	.60	"	.65
Overissue News.....	.70	"	.75
Old Newspapers.....	.60	"	.65

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.90	@	3.00
No. 1 Soft White	2.50	"	2.75
No. 2 Mixed.....	.90	"	1.00
Solid Ledger Books..	2.00	"	2.10
Overissue Ledger Stock	1.75	"	2.00
White Ledger Stocks	1.50	"	1.65
Mixed Ledgers	1.25	"	—
No. 1 Heavy Books	1.10	"	1.20
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock.....	1.15	"	1.20
Manila Env. Cuttings	2.55	"	2.65
Manila Envelope Cuttings, extra quality	2.65	"	2.75
White Blank News..	1.70	"	1.80
No. 1 Kraft.....	1.35	"	1.45
Extra No. 1 Kraft..	1.75	"	—
Mixed Papers.....	—	"	.40
Print Manila	.60	"	.65
Container Manila....	.60	"	.70
Old Newspapers.....	.45	"	.50
Paper Wool Strings.	.95	"	1.15
Overissue News.....	.65	"	.70
Box Board Chips....	.35	"	—
Corrugated boxes....	.55	"	.65
Kraft corrugated boxes	1.15	"	1.25
New Kraft Corrugated Cuttings	1.75	"	—
Screening Wrappers.	.85	"	.90

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	3.00	@	—
Domestic	3.15	"	—
Sisal Rope.....	2.60	"	—
Mixed Rope	.85	"	1.00
Transmission Rope—			
Foreign	2.50	"	2.75
Domestic	2.75	"	3.00
Soft Jute Rope.....	3.75	"	4.00
Manila Rope—			
Foreign .....(nominal)			
Domestic	5.75	"	6.00
Jute Carpet Threads.	2.25	"	2.75
Bleachery Burlap....	4.25	"	4.75
Scrap Burlap—			
Foreign	3.00	"	—
Domestic	2.85	"	3.10
Scrap Sisal.....	2.50	"	2.60
Scrap Sisal for Shredding	2.50	"	2.60
Wool Tares—			
Foreign	(nominal)		
Domestic	2.85	"	3.00
Aust. Wool Pouches.	2.75	"	3.00
New Burlap Cuttings	3.75	"	4.00
Heavy baling bagging	3.00	"	3.25
Paper Mill Bagging..	2.50	"	2.75
No. 2 Bagging.....	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.03¾	"	4.00
New White No. 1.	.06	"	.06¼
New Light Flannelettes	.03¾	"	4.00
Canton Flannel, Bleached	.06	"	—
Underwear Cutters,			
Bleached	.05	"	.05¼
Silesias No. 1.....	.04	"	.04¾
New Black Silesias..	3.00	"	3.25
Red Cotton Cuttings	.04	"	.05
Soft Unbleached....	.06	"	.06¼
Blue Cheviots.....	.04¼	"	.04½
Fancy	.01½	"	.01¾
Washable	.01½	"	.01¾
Cottons—According to Grades—			
Blue Overalls.....	.04	"	.04¼
New Black, Soft..	.03	@	.03¼
Khaki Cuttings.....	.02	"	.02¼
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	—
New Canvas.....	.05½	"	—
B. V. D. Cuttings...	.06	"	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	"	2.25
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	2.00	"	2.25
Old Blue Overalls...	1.60	"	2.00
Thirds and Blues....	1.25	"	—
Miscellaneous	1.25	"	1.35
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.20	"	1.25
No. 2.....	.95	"	1.00
No. 3.....	.85	"	.95

Foreign Rags

(F. o. b. Boston)

Canvas .....(nominal)	
Dark Cottons.....(nominal)	
Dutch Blues.....(nominal)	
New Checks and Blues(nominal)	
Old Fustians.....(nominal)	
Old Linsey Garments.(nominal)	
New Silesias.....(nominal)	

CHICAGO

Waste Paper

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings ...	3.15	@	—
No. 1 Hard White	2.50	"	2.65
No. 1 Soft White.	2.00	"	2.20
Ledger and Writings	.85	"	.95
Solid Books.....	.83	"	—
Blanks	1.45	"	—
Krafts	1.40	@	1.50
New Kraft Cuts....	1.60	"	1.75
Overissue News.....	.60	"	—
Old Newspapers—			
No. 1 Folded News	.70	"	.80
No. 1 Mixed Paper	.45	"	—
Roofing Stocks—			
No. 1.....	.95	"	1.00
No. 2.....	.85	"	.90

Institute Members Get Insurance

Ninety-four persons at the Institute of Paper Chemistry, at Appleton, Wis., engaged in the educational research of paper and pulp products, have recently become eligible to life insurance of $1,000 each.

The group policy was issued by the Prudential Insurance Company of America on the contributory basis, the employees themselves paying a part of the premium and the remainder of the expense being assumed by the Institute.

Nicaragua To Make Paper

President Anastasio Somoza, according to a press dispatch of April 24, from Managua, Nicaragua, has announced that the Minister of Public Works, Dr. Antonio Flores Vega, had awarded to Arturo Gadala Maria a contract for the manufacture of paper from forestry products. The concessionaire agrees to bring sufficient foreign capital into Nicaragua to erect a mill large enough to provide paper for domestic consumption and also for export. The government gives many liberal concessions, including exemption from import duties and local taxes.

C. B. Morgan Heads Eastern Corp.

Clyde B. Morgan, associated with Rayonier Inc. for the past four and a half years, has resigned as vice president. He will leave New York immediately for Bangor, Maine, where he will take up his new duties as president of Eastern Corporation.

Mr. Morgan is well known in the pulp and paper fields, having been associated with the S. D. Warren Company in Boston for many years as executive vice president prior to his joining Rayonier.